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ENVIRONMENTAL Technical Applications Center

TECHNICAL NOTE
70-2

ETAC

AN ANNOTATED CLIMATOLOGICAL BIBLIOGRAPHY OF THE BENELUX COUNTRIES (1960-1969)

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and
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Preface

One of the primary functions of the Technical Information Section of the USAF Environmental Technical Applications Center (ETAC) is to locate reference material requested by the various governmental agencies and those civilian organizations completing government contracts. The requests are generally initiated to aid in the solution of specific problems. However, many of these bibliographies represent a substantial listing of pertinent sources which, having been compiled, could prove very beneficial to other researchers with similar interests in subject matter or area of coverage. It is with this in mind that USAF ETAC publishes certain reference listings such as this bibliography. It is believed that, by publication and distribution of these consolidated reference lists, much of the time-consuming reference-searching of the researcher can be eliminated.

Inclusion of an item in this listing does not constitute an indorsement of the information included therein by the DOD, USAF, Air Weather Service, or USAF ETAC. It also must be noted that references selected for this bibliography should not be construed as being the best or only references available as many excellent papers, reports, etc. were no doubt overlooked during the limited search period allotted the author for this project.

Introduction

This bibliography was compiled as a by-product of the regular reference-searching that characterizes the normal workload of the Technical Information Section, USAF ETAC. Many of the abstracts herein were taken from the publications themselves, many from Meteorological and Geoastrophysical Abstracts (Amer. Met. Soc.), and others were prepared by members of the Technical Information Section of USAF ETAC. The individuals identified below are credited with the preparation of one or more abstracts shown in this publication.

Initials		Initials	
ALS	Alvin L. Smith, Jr.	ILD	Isadore L. Dordick
AV	Andre Vandenplas	IS	Ismail Saad
DBK	Dov B. Krimgold	MLW	Marie L. Weight
DLB	Dennis L. Boyer	NN	Nndem E.U. Nndem
EZS or ES	Evelyn Z. Sinha	VJC	Vincent J. Creasi

Since only a limited time was available to the authors to compile this reference listing, it is very possible that, in some cases, an author's best work is not the item we have included. Furthermore, some important papers, reports, summaries, etc., undoubtedly have been completely overlooked in our search and we offer our apologies for such unintentional oversights.

It will be noted that references in this bibliography are listed alphabetically by author for the four segments (General references, Belgium, Luxembourg, and Netherlands) but the items are numbered consecutively without a break for the segments. For convenience, a subject index is furnished on pages vii and viii. A locator map of the country precedes each section. Stations shown are only a sampling and are not meant to be an official station list of the country. In the left margin opposite each item, the publication date and the language(s) of the reference are shown. Each item lists a source at which the article can be located either by library accession number, AD number, or other indicator. Generally, most references were

located within the Washington, D.C. area. Abbreviations denoting the various libraries are identified under Index to Source Symbols below.

Index to Source Symbols

Census	Census Bureau Library, FOB 3 Suitland, Md.
DAS	Atmospheric Sciences Library, ESSA, Silver Spring, Md.
DAS P Col	Periodical Collection, Atmospheric Sciences Library, Silver Spring, Md.
DLC	Library of Congress
DLC Gov. Pub. R. Rm.	Library of Congress, Government Publications Reading Room
DNAL	National Agricultural Library, Dept. of Agriculture, Beltsville, Md.
IPB	Information and Publications Branch, USAF ETAC

Bibliographies. During the reference search to accomplish this listing, the bibliographies entered below were noted and are considered excellent compilations of pertinent references:

Roman, Simon J. An Annotated Bibliography of Climatic Maps for Belgium and Luxembourg, F.A.S., Office of Climatology, Weather Bureau, Wash., D.C., Apr 1951. DAS M(016) U587be Maps, and AD 660849.

Wallace, J.A. An Annotated Bibliography on the Climate of Luxembourg. U.S. Dept. of Commerce, Weather Bureau, WB/BC-53, Wash., D.C., Jun 1952, 1- p. AD 660673.

Grimes, Annie S. and Weight, Marie L. Annotated Bibliography on Climate Maps of the Netherlands. Wash., D.C., U.S. Weather Bureau, Jan 1961. 7 p, 24 titles, annotated. DAS M(016) U587ne.

Netherlands Royal Meteorological Institute. Report of the Netherlands on National Climatological Activities 1955-1959, Rept. to WMO Secretariat, De Bilt, 1960, 3 p. IPb Files.

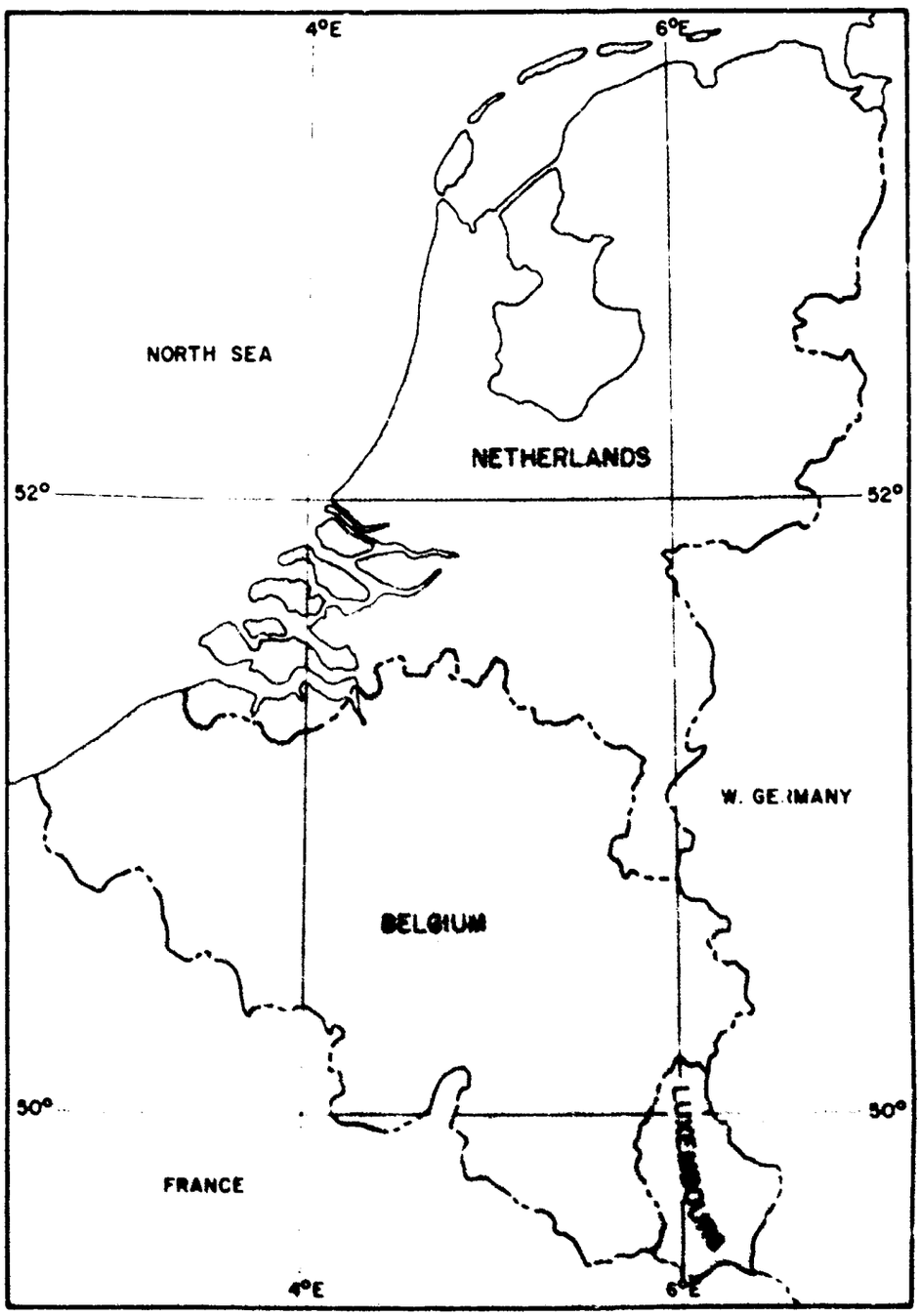
The author wishes to thank Mrs. Edna G. Robinson, USAF ETAC for her excellent work in arranging and typing the numerous references in this bibliography.

The valuable assistance obtained from personnel of the various libraries in the Washington, D.C. area is gratefully acknowledged; their efforts facilitated the task of reference searching for this publication.

SUBJECT INDEX

SUBJECT INDEX (cont)

BENELUX COUNTRIES



AN ANNOTATED CLIMATOLOGICAL BIBLIOGRAPHY OF THE BENELUX COUNTRIES (1960-1969)

BENELUX

Regional Sources

1. Black, Robert E. Cyclones and Anticyclones in Europe. Hq., 2d Weather Wing (V), APO New York 09332, 2WWTN 69-2, 2VS Project 513, 1 Sep 1969, 70 p, 31 refs. AD 692731.

...Numerous studies, dating from 1783, have been conducted on cyclone and anticyclone paths. This study discusses movement and generation of pressure centers, both cyclones and anticyclones, from a theoretical and climatological point of view. It discusses, by month, the pressure system paths over Europe; areas of genesis; and the relationship of paths to 500-mb circulation. Cyclogenesis on the lee side of a terrain barrier is discussed in the light of the conservation of potential vorticity. Pettersen's development formula is used to show the effect of landlocked bodies of water on the genesis of pressure systems. Cyclone and anticyclone tracks vary from season to season, month to month. The tracks, shown on charts, are discussed in the light of these variations. There are favored latitudes for cyclogenesis (40, 49-57, and 70N), as well as favored areas. The areas and factors affecting genesis are discussed. There is a striking similarity between the axis of maximum cyclone frequency and maximum west wind. There is also a similar tendency for anticyclone tracks. The mean wind features correlate with pressure system paths. The correlations and other features of the 500-mb circulation are discussed. (Author)

1969

English

2. Caspar, W. et al. Klimatologische Unterlagen Zur Nationalen Festsetzung der Temperaturgrenzen für die Verwendbarkeit von Material im Mittleren Europaischen Raum. [Climatological Boundaries for National Establishment of Temperature Limits for the Application to Material in the Central European Region], "Fachliche Mitteilungen," Reihe II, Nr. 58, Porz-Wahn, Nov 1968, 19 p, maps. IPB Files.

1968

German

...Contains maps of absolute maximum temperature and absolute minimum temperature for Europe. The absolute maximum air temperatures for the Benelux nations range from 33°C to 39°C. The absolute minimum air temperatures for the same region range from -15°C to -24°C. (DLB)

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3. Dingens, P. and Vernemmen. De Klimaatklassifikatie van C.W. Thornthwaite Toegepast op Belgie en het Groot-Hertogdom Luxemburg. [The Climate Classification of C.W. Thornthwaite Applied to Belgium and the Grand Duchy of Luxembourg] (Reprint, Natuurwet. Tigdschr 45 (1963), pp 145-198) Rijksuniversiteitte Gent Observatorium, Meteorologie en Geophysica Med deling No. 6, 1964, 54 p. DAS M(055) G412m, No. 6.

1964

Dutch

...The 3 types of water balances occurring in Belgium and the Grand Duchy of Luxembourg are illustrated by means of graphs for 3 characteristic stations (Leper, Stavelot, Baraque Michel). The water balance is calculated for each station with the aid of nomograms and auxiliary tables. Most elements calculated in the water balance are mapped (annual and 4 seasonal maps); seventeen numerical tables illustrate some seasonal and geographical textures. The published maps show the distribution of: a) annual and seasonal observed mean temperature; b) annual and seasonal calculated potential evapotranspiration: c) annual and seasonal observed mean precipitation; d) annual and seasonal calculated actual evapotranspiration; e) annual accumulated potential water loss; f) period and duration of accumulated potential water loss; g) annual and seasonal calculated water deficit; h) period and duration of water deficit; and i) annual and seasonal calculated water surplus. (Pt. Author Abs.)

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4. Cazzola, A. et al. Confronto Fra Precipitazioni Effettive e Precipitazioni Calcolate Mediante Elaborazione Elettronica. [Comparison Between Actual Precipitation and Electronically Calculated Precipitation], Centro Nazionale di Fisica dell' Atmosfera e Meteorologia, "Cenfam", CP No. 140, Rome, 1968, 14 p. DLC QC 811.I8.

1968

Italian

...Precipitation has been compared for western European region. The data utilized were obtained from both actual observations and calculations.

In this study western Europe is divided into 10 subregions for comparisons. Region 4 includes Belgium, Netherlands, and NW France. Fifty different situations were compared. (DLB)

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5. Godart, O. and Poppe, H. Les Temperatures dans le sol en Belgique et dans le Grand-Duche de Luxembourg. [Soil Temperatures in Belgium and Luxembourg], Ciel et Terre, Brussels 79(9/10):273-302, Sep/Oct 1963. DAS M(05) C569.

1963

French

...A study of 3-hourly soil temperatures and tabulated data for depths of 2, 5, 10, 20, 50 and 100 cm for 8 stations in Belgium and Luxembourg. Data are analyzed and summarized by month and for mid-season months. (ALS)

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6. Godart, O. and Poppe, H. Quelques Aspects de la Distribution du vent en Belgique et au Grand-Duche de Luxembourg. [Some Aspects of the Distribution of Winds over Belgium and the Grand Duchy of Luxembourg], Ciel et Terre, Brussels, 78(9/10):297-313, Sep/Oct 1962, 8 figs, 5 tables. DAS M(05) C569.

1962

French

...This study is based on data and tables of measurements from the meteorological network of the Dept. of the Air Routes, for 1945-1961. The authors deal principally with data from 4 stations: Ostend (lower Belgium), Melsbroek (middle Belgium), Saint Hubert (upper Belgium) and Luxembourg (Grand Duchy). Rawinsonde measurements made at the Royal Met. Inst., Uccle-Brussels for the period 1952-1959 are included. General consideration is given to surface and upper air winds; turbulence, variation with altitude, representation, and measurement. Figures and tables include data on: mean wind, relative frequency of strong winds, relative

6. (cont)

frequency of calms, resultant direction of wind, persistence and wind regime, monthly and seasonal variations, diurnal variations, and variation with the height. (AV)

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7. Guss, Hans. Statistische Charakteristiken des Hohenwindes fur den Raum Nordatlantik-Europa-Naher Osten. [Statistical Characteristics of Upper Air Winds for the North Atlantic-European-Near Eastern Area], Berichte des Deutschen Wetterdienstes, No. 105, Band 14, Offenbach a.M., 1967, 8 p, 44 maps. DAS M(055) G373 ba.

1967

German

...The circulation conditions of the lower stratosphere in the North Atlantic-European-Near Eastern Region and upper wind conditions at 225 mb and 96 mb have been examined. Radiowind measurements mainly were taken as a base. To obtain a network of points of intersection of coordinates these measurement results were completed from synoptic upper-air charts -- for the above mentioned levels -- in using cyclostrophic wind and by interpolation to a universe of wind values free of gaps. On the basis of such homogeneous material some statistical characteristics of upper wind have been computed and represented on regional maps for the North Atlantic-European Region with windroses, isotachs, mean vector wind, persistence as well as zonal and meridional standard deviation. In doing so the representativeness of the basic material was checked. Considerations based on the comparisons of these results yielded some essential features of the regional distribution of these upper wind parameters which appear interesting in relation to atmospheric circulation. Statistics for the 55°N 10°E area are applicable to the Benelux nations. (Pt. Author Abs.)

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8. Hoffmann, Gert. Die Mittleren Jahrlichen und Absoluten Extremtemperaturen der Erde. [The Mean Annual and Absolute Extreme Temperatures of the Earth], Meteorologische Abhandlungen, Inst. fur Met. und Geophy. Freien Univ., Berlin, Band VIII, Heft 3, 1960, 3 parts. DAS M09.22 B515h.

1960

German

...This study of the extreme temperatures of the earth has been published in 3 parts. Part I is the text, Part II contains the maps, and Part III contains the tables.

8. (cont)

Maps of Europe portray the location of the stations. Isotherm maps illustrate mean annual extreme temperature and absolute extreme temperature of Europe. Additional isotherm maps give mean minimum and absolute minimum temperature in Europe. (DLB)

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9. Meigs, Peveril. Atlas of Mean Monthly Temperatures. Earth Sciences Div., U.S. Army, Natick Labs., Natick, Mass., Tech Report ES-10, Aug 1964. IPB Files (oversize maps).

1964

English

...Color-coded maps of mean monthly temperatures for the world with 10°C intervals. Maps 25-36 cover mean monthly temp in Europe for Jan-Dec. (DLB)

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10. Paton, J. Noctilucent Clouds over Western Europe During 1966. "The Met. Magazine," Vol. 96, No. 1139, Jun 1967, pp 187-190. DAS M(05) G786m.

1967

English

...Contains an account of displays of noctilucent clouds compiled from reports that were received during 1966 from observers in Norway, Denmark, Holland, the British Isles, and Greenland and from crews of aircraft. (Author)

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11. Paulus, R. Wetterfernmeldenetze im Umbruch. [Weather Forecasting Network in the New System], "Fachliche Mitteilungen," No. 136, Porz-Wahn, Apr 1968, 19 p. IPB Files.

1968

German

...Contains a description of the new network in Europe. Brussels (Belgium) and DeBilt (Netherlands) are listed as relay station/forecast centers. Automated stations and facsimile operations are discussed in reference to the European network. (DLB)

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12. Roman, Simon J. An Annotated Bibliography of Climatic Maps for Belgium and Luxembourg. F.A.S., Office of Climatology, Weather Bureau, Wash., D.C., Apr 1961.
1961 DAS M(016) U587be Maps, and AD 660849.

English

...21 references on climatic maps for Belgium and Luxembourg. (VJC)

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13. Thornthwaite, C.W., Associates. Average Climatic Water Balance Data of the Continents, Part V, Europe. Laboratory of Climatology, Publications in Climatology, Vol. XVII, No. 1, Centerton, N.J., 1964, 229 p. DAC M6 D777.

1964

English

...Contains average water-balance statistics for Belgium, Luxembourg, and the Netherlands. Station lists give both the location (lat, long) and period of record. The parameters presented are: potential evaporation, precipitation, soil moisture storage, active evaporation, water deficit, and water surplus. (DLB)

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14. Thran, P. and Broekhuizen, S. Agro-Climatic Atlas of Europe (Vol. 1 of Agro-ecological Atlas of Cereal Growing in Europe) Pudoc, Centre for Agricultural Publications and Documentation, Wageningen (Neth.), Elsevier Publ.
1965 Company, Amsterdam, 1965, 507 p. DNAL 59Ag 8.

English

...Contains 128 climatic maps of the European area which includes Belgium, Luxembourg, and Netherlands. Maps are included showing temperature, precipitation, precipitation deficit, and humidity. Seven climatic area maps have also been included. (DLB)

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15. USAF, 2d Weather Wing, Aerospace Sciences Division. Catalogue of European Large-Scale Weather Types. 2WS Project No. 455, Hq., 2d Weather Wing, APO New York
1968 09332, 15 Jun 1968, 86 p, 2 refs. AD 836138.

English

...Among the first to attempt large-scale weather typing was F. Baur of the German Institute for Long-range Forecasting. Global circulation was grouped into three categories (zonal, mixed, and meridional) then, further subdivided into a total of 26 large-scale weather types. This

15. (cont)

publication includes a description of each of the large-scale weather types as well as typical examples of the surface and 500-mb charts. Tables give the number of days per month that a particular weather type occurs, the number of consecutive days per month that it occurs, the percentage frequency of occurrence, the most frequent duration, and the large-scale weather type that most frequently follows. (Author)

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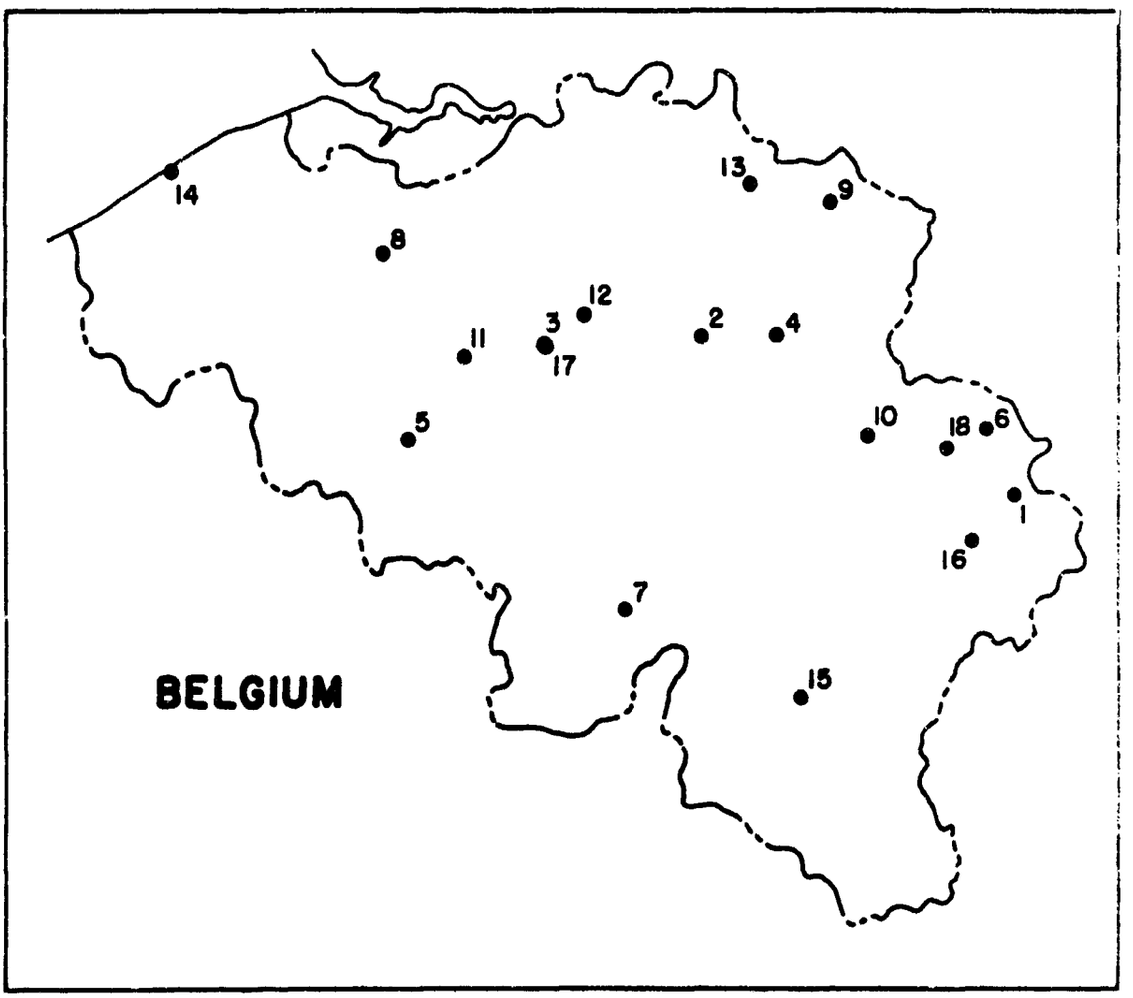
16. USAF, AWS, 2WW. FRELOC Weather Alternates - Supplemental Study II. Applied Climatology Report, 2W-1521, 2WW (MAC), APO New York 09332, Dec 1966, 5 p. IPB Files.

1966

English

...This report has been prepared to present further information on FRELOC weather alternates. Data which were not available for inclusion in 2W-1510 has been added. Chievre and Liege-Bierset are included in addition to the Belgium stations previously listed in 2W-1510. Also the Netherlands stations of Eindenhoven, Gilze-Rijen, and Volken, have been included. (Pt. Author Abs.)



Station List

1. Baraque Michel
2. Beauvechain
3. Brussels
4. Brustem
5. Chievre
6. Eupen
7. Florennes
8. Ghent
9. Kleine Brogel
10. Liege
11. Leper
12. Melsbrock
13. Mol
14. Ostend
15. St. Hubert
16. Stavelot
17. Uccle
18. Verviers

BELGIUM

17. Baeyens, L., Ocneys, G. and Wijnhoven, J. De droogteschade op grasland in 1959 in verband met de natuurlijke bodemgeschiktheid. [Drought Damage to Grassland in 1959 in Relation to Natural Soil Conditions] Agricultura, Louvain, 8(3):435-466, 1960, 9 tables, 8 refs. Dutch, French, and English summaries. DNAL 13 R 32.

1960

Flemish

...Deterioration of grassland by the exceptional drought of 1959 nas been evaluated thru estimation percentage of green grass 4-6 days after the rain began. Based on a study of the relation between grass vegetation, soil conditions, and climate, the authors test their conclusions upon grassland on known soils. The results show some lack of consistency, mainly due to nonpedological factors (maintenance and use of grassland). The salient pedological factor seems to be the moisture degree of the soil. Soil-texture is important on dry soils. Depth and character of the subsoil are of some importance, especially within critical moisture limits. (Author)

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18. Belgium, Institut National De Statistique. Annuaire Statistique de la Belgique. [Annual Statistics of Belgium], 1967, Ministere des Affaires Economiques, Bruxelles, 695 p. Available 1939-1967. Census B329 A84 1967.

1967

French

...Tabular data include monthly values of mean, mean minimum, mean maximum, absolute maximum and absolute minimum temperatures, number of days with temperature $\geq 25°C$, number of days with temperature $\leq 0°C$ for 4 stations. Also included are limited data on number of days with precipitation, snow, and hail. (AMS)

19. Belgium, Institut National de Statistique. La Statistique Agricole [Agriculture Statistics], Ministere des Affaires Economiques, Annuals 1946-...(1966), Brussels, 1967. DLC S469 .B4A28.

1967

French

...Contains extensive sections on climatology. Annual summaries are given for precipitation, temperature, and climatic conditions. Measurements were taken at Uccle. (DLB)

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20. Belgium, Institut Royal Meteorologique. Annuaire Climatologique [Climatological Annual]. Its Publications, Serie A, Nos. 6, 9, 12, 14, 24, 32, 43, 51-, for years 1956-...(1966), Brussels, 1968. DAS M(055) B429p.

1968

French

...Monthly climatological summaries for 6 selected stations and full precipitation data from about 50 stations. Two-hourly observations of pressure, temperature, relative humidity, vapor pressure, precipitation and hourly values of sunshine, and wind speed and direction made at the central meteorological station in Uccle.

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21. Belgium, Institut Royal Meteorologique. Annuaire Hydrologique de Belgique [Annual Hydrology of Belgium]. Commissariat Royal Au Probleme de L'eau, Annuals, 1960-...(1966), Uccle-Brussels, 1967. In French and Dutch. DAS M79 B912 anh.

1967

French

Dutch

...Contains hydrometeorological data for 16 primary stations and 6 secondary stations. The primary stations measure: solar radiation, air temperature, relative humidity, soil temperature, winds, and precipitation. The secondary stations measure only precipitation. Eight stations also measure evaporation. (DLB)

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22. Belgium Institut Royal Meteorologique. Rapport sur les Activites Dans Le Domaine De La Climatologie en Belgique 1965-1968. [Report on Climatological Activities in Belgium] Rpt. WMO Secretariat, Uccle-Bruxelles, 1969, 9 p. IPB Files.

22. (cont)

1969

French

...This report reveals the structure of the Belgian meteorological service. The number of stations in the various networks (meteorological, hydrometeorological, etc.) is given. Research objectives of the meteorological service are given. (DLB)

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23. Belgium, Institut Royal Meteorologique. Rayonnement Solaire a Uccle, 1951. [Solar Radiation at Uccle, 1951] Data available for 1951-...(1960), Its Publications, Ser. A., Nos. 15, 17, 18, 19, 28, 31, 34, 36, 41, 44, 49, and 52, 60 p each. DAS M(055) B429p.

French

...The Royal Meteorological Institute of Belgium heralds the publication of the radiation observations made at Uccle during the period 1951-1960. This first publication covering the year 1951, includes (a) classical data on sunshine duration recorded with a Campbell-Stokes heliograph and with the actinometric heliograph calibrated for a sensitivity threshold of 0.04 cal/cm/min; (b) the solar energetic radiation on a surface perpendicular to the rays (direct solar radiation); (c) diffuse radiation of the sky; and (d) global radiation, i.e., sky and sun radiation received on a horizontal surface. The daily hourly values of these various elements are given for the different months of the year. The sunshine duration is expressed in minutes and the radiation data in kilograms-calories per square meter. (AV)

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24. Belgium, Institut Royal Meteorologique. Statistiques Quinquennales [Pentade Statistics] "Observations aerologiques Station d'Uccle" (Aerological Observations of Uccle Station). Uccle-Bruxelles, 1967, mostly tables, also available are the pentades 1951-55 and 1956-60. DAS M(055) B492a.

1967

French

Datem

...A brief description is given of the instruments used, tables, and methods of computation. Mean monthly and annual surface pressure and temperature and their means, maximum, and minimum are tabled. Summarized upper-air data are given for the following levels 1000-, 900-, 850-, 700-, 600-, 500-, 400-, 300-, 250-, 225-, 200-, 170-, 150-, 130-, 100-, 70-, 50-, 30-, 20- and 10-mb surfaces except humidity which only goes to 400 mb. The elements given are temperature-maximum, mean, minimum, frequencies and standard deviation;

24. (cont)

geopotential height (same as temperature); and relative humidity-maximum, minimum, and frequencies; wind-mean vectorial and standard deviation of vectorial; maximum, mean scalar, factor of persistence, frequencies, and wind component both zonal and meridional.

The 0000 GMT and 1200 GMT radiosondes are treated separately. The first line of the summary is the 0000 GMT observation and the second is the 1200 GMT. (VJC)

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25. Belgium, Institut Royal Meteorologique. Synoptical Observations [Formerly "Observations of the Belgian Synotic Network"] Regie des Voies Aeriennes et Force Aerienne, Monthly Bulletin, 1949-...(Apr 1968), 1969, 31 p. STAR N69-35064 and DAS M(05) N592me.

1969

French

Dutch

...Tabulated data for the month; synoptic reports for 9-14 stations; temperature reports (00, 12 GMT) and PILOT reports (06, 18 GMT) from Uccle including standard isobaric surfaces and significants levels up to burst height. (DLB)

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26. Belgium, Service Meteorologique de la Regie des Voies Aeriennes. Observations d'Ozone. [Ozone Observations]. "Bulletin Trimestriel", Jul 1947-...4th Quarter, 1965 (Oct-Dec), Uccle-Bruxelles, 1966, 24 p, tables, graphs, DAS M(05) N592me.

1966

French

...Daily and hourly measurements of the total quantity of ozone taken with a Dobson spectrophotometer. The second part presents the vertical distribution of ozone and means of sounding plus ozonagrams. (VJC)

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27. Bultot, Franz and Dupriez, Gerard L. Etude hydrometeorologique des precipitations sur les bassins hydrographiques Belges, I, Bassin de la Semois. [Hydrometeorological Study of Precipitation over the Belgium Hydrographic Basin, Pt. 1, Semois Basin.] Belgium. Institut Royal Meteorologique, Publications. Ser. A, No. 64, 1968, 74 p, figs, tables. DAS M(055) B429p.

27. (cont)

...This study deals with the following: a brief description of the physical geographic characteristics of the basin; monthly, seasonal, and annual amounts of precipitation, including probability of dry and wet months, seasons and years; monthly, seasonal and annual normals, etc.; daily precipitation including distribution of seasonal and annual frequencies of daily precipitation, probability of the annual and seasonal daily precipitation of at least 20, 25, 30 and 35 mm, etc.; precipitation in the course of periods of varying duration; dry and wet periods; nomogeneity of precipitation over the basin; spatial distribution of precipitation over the basin; and snow cover. Extensive data are presented in the text and an appendix. (ILD)

1968

French

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28. Bultot, F. Le programme hydrometeorologique de l'institut Royal Meteorologique. [The Hydrometeorological Program of the Royal Meteorological Inst. of Belgium]. Ciel et Terre, Brussels, 81(11/12); pp 345-361, Nov/Dec 1965, figs, tables, refs. DAS M(05) C569.

1965

French

...The author emphasizes the importance of the "water problem" in Belgium and summarizes the cooperation of the Royal Meteor. Inst. in hydrological research work, namely in the International Hydrological Decade. The program of the Belgian hydrometeorological network and the utilization of the data are analyzed. The program includes the statistical study of the daily water amount collected over 7 basins for the period 1954-64, the installation of a basic hydrometeorological network, and the collection, statistical processing, and regular publication of its observations. (AV)

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29. DeBacker, Simon. Problèmes d'hydrométéorologie concernant le sol et la végétation. [Hydrometeorological Problems of Soil and Vegetation.] Académie Royal des Sciences d'Outre Mer, Brussels. Classe des Sciences Techniques, Mémoires in 8°, n.s., 16(3), 1965. 60 p, figs, tables, refs. French and Dutch summaries p 3. DLC Gov. Pub. R. Rm.

29. (cont)

1965

French

...An examination is made of some problems in hydrometeorology which are investigated by various specialists during the last 20 years, with emphasis on the study of the water circulation in an area limited to the lowest layers of the atmosphere, the soil to the phreatic water table and the vegetation on this soil. (AV)

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30. DeBacker, L.M. Études microclimatiques, Opuscule III, Pt. A. Microclimat d'une peuplerai, Zoutleeuw (Leau), 1954-1955; enregistrement des temperatures a l'interieur et dans le voisinage d'un Populus Robusta. [Microclimatic Studies, Pamphlet 3, Pt. A. (Microclimate of a Poplar Planting, Zoutleeuw (Leau), 1954-1955; Temperature Recording, within and in the Neighborhood of a Populus Robusta], Belgium, Institut Royal Meteorologique, Publications, Ser. A., No. 50, 1964, pp 1-16, figs, graphs, plates, tables, also: Vandenplas A., Pt. B., Apercu climatologique du Nord-Est de la Hesbaye, periode 1951-60. (Climatological Survey of Northeastern Hesbaye during 1951-60.) pp 17-22, tables. DAS M(055) B420P A No. 50.

1964

French

...A survey of the microclimate of a poplar planting during a year and chiefly deals with the phenomena related to heat transfer within a poplar. The winter conditions are investigated in order to obtain data on the freezing of the sap. In order to investigate the frost-cracks of poplars, a microclimatic station was installed in a poplar planting at Léau (northeastern Hesbaye) equipped with platinum resistance thermometers placed within and in the neighborhood of the planting and with a Honeywell-Brown recorder. A Campbell-Stokes heliograph supplied data on sunshine duration in the planting. Pt. A deals with the temperature data obtained during the critical days of winter 1954-55. Graphs and plates show the temperature distribution for the critical winter days. On clear days, pronounced horizontal gradients and rapid variations are noted by reason of the alternation of severe night frost and daytime sunshine. Special attention is given to the rapidity of the variation in thermal conditions on these clear days and on the rapid alternation of the freezing and thawing of the sap in the wood rings which cause internal tensions and frost-cracks. Pt. 3 gives a climatological survey for the northeastern Hesbaye where the poplar planting of Zoutleeuw (Léau) is located and where the microclimatic station was erected. (AV)

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31. Defrise, P., Maenhout, A. and Van Mieghem, J. La Station d'aerologie de l'Institut Royal Meteorologique de Belgique. [The Aerological Station of the Royal Meteorological Institute of Belgium], Belgium, Institut Royal Meteorologique, Publications, Ser. A., No. 16, 1961, 24 p, 22 figs, 12 refs. DAS M(055) B429p.

1961

French

...A survey of the present state of the aerological station of the Royal Met. Inst. of Belgium. It contains a concise description of the main instruments and of the measurements made, together with a brief comment on the usefulness of these observations. The Royal Met. Inst. makes every day, at 0h and 12h (U.T.), 2 radio-soundings of pressure, temp, and humidity. The British Kew MDII, the German Graw H50, and the American AMT sondes are used for this purpose; the calibration technique of these radiosondes is briefly described. Since 1958 some 30 special soundings are made every year in order to determine the vertical distribution of atmospheric ozone. Atmospheric electricity soundings are also made, using a triode fitted on a Kew MKII radiosonde. Upper-wind radar measurements are made 4 times a day. Part II of the publication deals with the radiometeorological appliances installed at Uccle for precipitation and thundery sector detection. The last part is devoted to tropospheric propagation of radio waves, statistics, and the publication of aerological observations. (AV)

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34. DeLaey, M. Les enquetes generales de pollution atmospherique. [General Investigations on Air Pollution], Centre Belge d'Etude et de Documentation des Eaux, Liege, Bulletin, 16(231):81-83, Feb 1963. DLC Gov. Pub. R. Rm.

1963

French

...This study was conducted by a section called CEBEDAIR of the Belgian Center for Study and Documentation of Water. The author explains the meaning of general investigation of air pollution, defines the purposes,and surveys the method used. The possibilities and restrictions of such investigations are shown by analyzing the great economic interest involved as concerned the industrial and demographic development of a given region. Inquiries have been made in 6 various regions of the Belgian provinces. In order to determine probable developments of air pollution, basic scales were established. For example, for dust, a distinction was made between the surroundings of the country, the region neighboring on a town, the town, and the industrial region. The results of the first observations seem to reveal that air pollution intensity in Belgium is one of the highest in Europe. (AV)

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33. Derouaux, A. Les enquetes particulieres en matiere de pollution atmospherique [Detailed Investigations on Air Pollution], Centre Belge d'Etude et de Documentation des Eaux, Liege, Bulletin, 15(231):79-81, Feb 1963. DLC Gov. Pub. R. Rm.

1963

French

...In order to investigate air pollution in Belgium, the Belgian Center for the Study and Documentation of Water created a section called CEBEDAIR. This section examined two types of investigations on air pollution - general and particular cases. As concerns the latter, the section made some research on damage caused to animals and plants by the ejecting of fluoric products, disengagement of SO_2, emission of cement dust, poisoning due to the H_2S diffusion, etc. Cooperating in this research were specialists of medicine, toxicology, and climatology. (AV)

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34. Dingens, P., Moerdijk, W. and Steyaert, H. De distributie van de dagelijkse neerslag te Gent. [The Distribution of Daily Rainfall Amounts at Ghent], Natuurwetenschappelijk Tijdschrift, Ghent, 48:103-140, 1966, figs, tables, eqs. English and French summaries, p 103, reprinted as Ghent. Rijksuniversiteit. Observatorium Meteorologie en Geophysica, Mededelingen, No. 9, 1966. DAS M(055) G412m.

1966

Flemish

...Frequencies of daily rainfall amounts generally have a J-shaped distribution. The observations made at the Observatory of Ghent University during the period 1901-50 are first analyzed to obtain the annual distribution. Different kinds of frequency curves are adjusted to the empirical distribution; a Polya curve, an exponential, and a Pearson-curve type VI. The annual distribution is fitted best by a transformed exponential distribution, abstraction being made of the representative point for rainless days and of the points corresponding to extreme and exceptional rainfall amounts. For a given daily rainfall amount one obtains the probability θ_i and the corresponding number of days Δ_i in a mean year. The same frequency curve then used to study the seasonal and the monthly distribution. A table gives the obtained results. (Author)

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35. Dingens, P. et al. De distributie van de luchtdruk te Gent [The Distribution of Pressure at Ghent], Reprint Natuurwet, Tijdschr. 46 (1964), pp 190-198 Rijksuniversiteatte Gent Observatorium, Meteorologie en Geophysica Mededeli- No. 7, Ghent, 1965. DAS M(055) G412m No. 7.

...The daily observed values of the mean atmospheric pressure, reduced to 0°C and to sea-level, during the period 1921-1960 at the Observatory of the Ghent University, were analyzed per pentad.

1965

Flemish

Each of these 73 pentads leads to a mean value and a dispersion for the corresponding 200 observations. The variation of the dispersion is very pronounced and shows a shift of 1 month as compared with the annual motion of the sun. In winter, the dispersion is more than twice the summer value. These facts are correlated with the seasonal variability of the thermal structure of the atmosphere. The frequency distribution of the pressures is studied for each season and, while the normal distribution does not seem to be applicable, the observations are very well fitted by a type I Pearson-curve. For each season the characteristics of this distribution are established and the graphical representation of the data is given. (Author)

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36. Dogniaux, R. and Doyen, P. Analyse statistique du trouble atmospherique a Uccle a partir d'observations radiometriques, periode de reference 1951-65 [Statistical Analysis of the Atmospheric Turbidity at Uccle from Radiometric Observations, 1951-65], Belgium, Institut Royal Meteorologique, Publications, Ser. A, No. 65, 1968, 45 p, figs, charts, tables, refs, eqs, French and English summaries pp 3-4. DAS M(055) B429p.

1968

French

...During 15 years (1951-65), regular observations of the solar radiation classical components (direct, global, and diffuse) have been carefully analyzed and preserved at Uccle (Brussels, Belgium). By a statistical compilation of these records, the authors have established an analytical link between Linke turbidity factor T and the ratio D/G of the diffuse to the global radiation. (Part Author Abs.)

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37. Dogniaux, R. Bases meteorologiques du calcul des apports thermiques au cours de la periode estivale [Meteorological Basis for Calculation of Thermal Properties in the Course of the Summer Season], Inst. Royal Meteorologique de Belgique, Publications, Ser. A, No. 61, Uccle-Bruxelles, 1966, 42 p. DAS M(055) B429p Ser. A.

1966

French

...In this study meteorological characteristics are used to evaluate thermal properties during the summer. Thermal properties are analyzed as a function of both temperature and wind at Uccle for the period 1931-60. (DLB)

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38. Gerardy, J. and Grandjean, J. Incidence des conditions meteorologiques sur la pollution microbiologique de l'atmosphere liegeoise. [Influence of Meteorological Conditions Upon the Microbiological Pollution of the Atmosphere at Liege], Belgium, Institut Royal Meteorologique, Publications, Ser. B, No. 47, 1966, 13 p, tables, refs. DAS M(055) B429p Ser. B.

1966

French

...The instrumentation used to pick up the microbes is described. In investigating the relationships between microbial concentrations and weather conditions, air masses were considered in the four following groups: 1) maritime polar; 2) returning polar; 3) maritime tropical, and 4) maritime and continental air. Microbe countings in samples of unstable air masses amount on the average to twice those in stable air masses. Within stable air, microbe values seem to be unaffected by temperature, humidity, or wind velocity conditions. Within unstable air, on the contrary, high values are associated with high temperatures, low relative humidities, and strong or moderate winds; whereas low countings occur for lower temperatures, high humidities, and feeble to zero wind. (AV)

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39. Goossens, M. et al. Belgie in de Europese Gemeenschaf [Belgium in the European Community], Uitgeverij De Nederlandsche Boekhandel, Antwerp, 1967, 234 p. DLC GB 226.C6.

1967

Flemish

...Contains extensive climatological information on Belgium. Graphs are given of mean and extreme winter temperature for Uccle (p 37), POR 1830-1960. Another

39. (cont)

graph presents annual precipitation for Uccle. In addition, temperature and precipitation curves are given for 11 stations. An isohyetal map reveals precipitation regions of Belgium at 100-mm intervals. (DLB)

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40. Herry, S. et al. Etude des eaux de la Meuse en 1964. [Investigation of the Meuse Waters in 1964], Centre Belge d'Etude et de Documentation des Eaux, Liege, Bulletin, 18(257):170-185, Apr 1965, 7 figs, 2 tables. DLC Gov. Pub. R. Rm.

1965

French

...Systematic investigation of the waters of the Meuse has been continued in 1964 in view of determining the self-purifying ability of the river and the evolution of some chemical compounds. A chapter is devoted to the analysis of the effects of the uncommon prolonged drought conditions as it influenced the river pollution by the resulting low flows and high temperatures. The drought lasted from Dec 1963 through Aug 1964 without interruption, and the rainfall deficit sometimes amounted to nearly half the normal rainfall. (AV)

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41. Kopcewicz, T. O pewnej metodzie badania wplywu warunkow meteorologicznych na srednia skazenie powietrza u powierzchni ziemi stratosferycznymi pylami radioaktywnymi. [A Method of Studying the Influence of Meteorological Conditions on Mean Air Pollution at the Surface by Stratospheric Radioactive Dust], Acta Geophysica Polonica, Warsaw, 13(2):75-84, 1965, figs, (2 fold), tables, refs. Russian summary p 84. DAS P Col.

1965

Polish

...The method of investigating the effect of meteorological conditions upon the contamination of the atmosphere by radioactive substances involves the classification of the results of daily measurements of the pollutants. The mean daily values of atmospheric pressure (p) and temperature (t) are calculated. Each pair of daily values of t and p corresponds to a plane of a system of coordinates (t,p) at a point. The mean daily values of wind speed and direction, cloud cover and type, atmospheric precipitation (amount and type), etc. are plotted at each of these points. Two characteristic lines, namely $p = \bar{p}$ and $t = \bar{t}$ are drawn; $\bar{p}$ and $\bar{t}$ represent the mean long-period

41. (cont)

values of atmosphere pressure and temperature at each station for an appropriate time interval. These lines separate the plane into 4 quadrants. The variation of pollution is made separately for each quadrant. The results of the application of this method to measurements made in Feb 1952, 1962,and 1963 at Uccle (Belgium) and Warsaw (Poland) are presented. (ILD)

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42. Maenhout, Andre G. Het aerologisch station van het Kroninklijk Meteorologisch Instituut van Belgie. [Aerological Station of the Royal Meteorological Institute of Belgium], Belgium. Institut Royal Meteorologique, Publications, Ser. A, No. 54, 1965. 18 p, figs, refs. DAS M(055) B429p.

1965

Flemish

...On account of the rapid evolution in geophysical sciences, the aerological station of the Royal Met. Inst. of Belgium has recently been re-organized and equipped with latest up-to-date instrumentation. The paper gives a summary dealing with equipment, measurements, and observations at Uccle, which constitutes a restatement of a similar report published in 1961 (Belgium, I.R.M., Pub. Ser. A, No. 16). Radio soundings are now made using the improved German Graw M60 (PTU) sonde and the American AMT4 sonde (principally for ozone and electric field measurements). These instruments, their calibration, and the technique of radio soundings are described. Upper wind measurements are made using various radar facilities, an automatic tracking radar which also serves for precipitation detection was installed in 1963. A cooperative program for ozone soundings during the IQSY is succinctly considered, together with the now regularly made soundings of the vertical gradient of the electric field. Short paragraphs deal with the thunderstorm detectors now in use, and with measurements of the tropospheric propagation of radio waves. (AV)

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43. Maenhout, Andre G. Bijdrage tot de kennis van het brekingsinder klimaat-voor zeer korte radiogolven, over Belgie [Contribution to the Knowledge Refractive Index Climatology for Very Short Wave Lengths over Belgium], Vlaamse Academie voor Wetenschappen, Letteren en Schone Kunsten van Belgie. Klasse der Wetenschappen, Mededelingen, 23(4), 1961, 25 p, 10 figs, 6 tables, 13 refs. DAS M10.62 M185.

43. (cont)

1961

Flemish

...The atmospheric refractive index plays an important part in the study of the tropospheric propagation of waves with short wave lengths and in their use to determine distances (radar, tellurometer) as well as in radio localizing (radiotheodolite, radio telescope, etc). By means of radio soundings made at Uccle (Belgium) during the last 6 yrs, the author computed the refractive index of air for the electromagnetic waves with wavelengths between 5 m and 2 cm and determined average variation of this index in terms of the altitude. (AV)

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44. Maenhout, Andre G. La distribution de deux parametres radiometeorologiques a Uccle (1957-1962). [The Distribution of Two Parameters of Refraction at Uccle], Ciel et Terre, Brussels, 79(9/10):pp 303-310, Sep/Oct, 1963. DAS M(05) C569. Also appears in contributions No. 89, Institut Royal Meteorologique de Belgique. DAS M(055) B429co.

1963

French

...Description of statistical distribution of two radiometeorological parameters: the co-index of the air refraction and the average gradient of this co-index between the ground surface and the 850-mb level. Both values were computed twice a day at the aerological station of the Royal Meteor. Inst. (Uccle) from April 1, 1957 to March 31, 1962. The cumulative distribution of the co-index and its gradient computed from the meteorological observations at 00h and 12h UT for a 5-yr period (April 1957-March 1962) are represented in 8 graphs showing the time percentage during which the value in ordinates is not exceeded. Some characteristic data of these distributions are represented in 4 tables. Another table gives the scattering of the values of co-index at surface and of co-index gradient around their median value. It is shown that this scattering is more important at 12h than at 00h and in both cases it is higher in summer than in winter. (AV)

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45. Maenhout, Andre G. Quelques donnees sur le radioclimat d'Uccle [Some Data on the Radio Climate of Uccle], Ciel et Terre, Brussels, 78(11/12):391-396, Nov/Dec 1962, 2 figs, 4 tables, 5 refs. DAS M(05) C569.

45. (cont)

...The propagation of radio waves with frequencies of more than 30 Mc/s and influenced by the thermodynamic conditions of the atmosphere are dealt with. The knowledge of this propagation depends on some physical properties of the medium within which the waves propagate and, on the refractive index. Three tables give the mean values of the refractive index at the surface and at a few standard levels. These mean values were computed on the basis of observations made from Jan 1, 1956 to Dec 31, 1960 at the Royal Met. Inst. in Uccle. The author points out that the radio waves undergo a deflection due to decrease of the refractive index with height and emphasizes the importance of this deflection for very high frequency radio communication as well as in the field of space communication. (AV)

1962

French

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46. Maenhout, Andre G. Synoptische studie van Meteorologische invloeden op het vertikaal verloop van de brekingsindex voor zeer korte radiogolven. [Synoptic Study of the Meteorological Influences of the Vertical Gradient of the Microwave Refractive Index], Vlaamsche Academie voor Wetenschappen, Letteren en Schone Kunsten van Belgie, Brussels. Klasse der Wetenschappen, Verhandleingen, 29 (94), 1967, 103 p, figs, charts, tables, refs, eqs. English summary, pp 102-104. DAS M10.62 M185sy.

1967

Flemish

...The microwave refractive index (n) and the refractivity N = (n-1) x 10 are considered on a synoptic scale at which horizontal variations of (n) are small compared to the vertical variations. A method is developed for computing (N) from radiosonde measurements of atmospheric pressure (p), air temperature T, and relative humidity U. The generation processes of ground inversions are reviewed and the results of a statistical study on the occurrence of this inversion type at Uccle (Brussels) are outlined and discussed. (DBK)

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47. Michel, Henri. A Propos de Grelons Extraordinaires. [Unusual Hailstones], Ciel et Terre, Brussels, 77(7/8):pp 293-295, Jul/Aug 1961, fig. DAS M(05) C56.

1961

French

...Four coarse hailstones, the biggest of which had a perimeter of 30 cm, fell in Brussels in 1955. On Apr 20, 1960, between 10 and 11 a.m., the biggest hailstone ever

47. (cont)

reported in Brussels was recorded. A lump of ice, estimated weight 3 kg, fell on the Citroen Works at Brussels. The analysis of its contents, made at the Royal Meteorological Inst. of Belgium, proved that it actually was a hailstone. The chemical analysis showed that water in the atmosphere is far from being pure. (AV)

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46. Mocken, H.H. Ph. and Alderhout, J.J.H. The Relationship between the Concentration of World-wide Fall-out in Air and in Rain. Air and Water Pollution, London, 7(2/3):pp 91-93, May 1963, 2 figs, 5 refs, 4 eqs. DAS M(05) 1683at.

1963

English

...Daily measurements of the artificial beta-radio activity at ground level, are carried out at the Belgium Nuclear Research Center at Mol. These measurements include the concentration in air (C_a), the concentration in collected rainwater (C_r), the rainfall (h), and the related deposition rate for rain per unit area ($A_r = hC$).

Data collected during Sep-Dec 1961 and May-Sep 1962 were used for regression analysis. Data collected Jul-Dec 1957 in Germany are used in illustration. A combination of 3 mechanisms for determining the radioactivity collected in rainwater is given. Rainfall is a determining parameter for describing the relationship between the fall-out in rain and in air. The C_r/C_a value averaged over a longer time than 1 day tends to be unaffected by the amount of rainfall. (AS)

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45. Mauson, Alphonse. Enquete sur la resistance de diverses provenances de Douglas vert a l'hiver, 1962-63 en Belgique. [Investigation on the Resistance of Douglas Fir of Various Origins during the Winter 1962-63 in Belgium], Societe Royale Forestiere de Belgique, Bulletin 71(1):pp 1-11, Jan 1964, 5 tables, 8 refs. DNAL 99.9 B83.

...In Belgium the winter of 1962-63 caused a lot of damage to Douglas fir plantations. That winter was the most severe since observations started in Belgium. The mean air temperature was the lowest recorded since 1833. Sunshine duration was significant and easterlies prevailed. The soil was frozen until the beginning of April. The damage was less important in upper Belgium than in the rest of the country. The plantations with southern exposure suffered

49. (cont)

more damage than those exposed to the north. The investigation of the damage, in relation to the climatic factors, suggests that the cause of the damage is connected with 3 main factors; a) the depth of the frost in the soil, b) the root distribution in depth, and c) the rapidity and the intensity of the diurnal or periodic heating accompanied by intense sunshine and dry winds. (AV)

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50. Pissart, A. Laboratoire de Geographie Physique, Universite de Liege, Les iondations dans la region de Verviers-Eupen I, Etude prealable a un amenagement du territoire. [The Floods in the Region Verviers-Eupen, Pt. 1, Study Preliminary to a District Planning Scheme], Centre Belge d'Etude et de Documentation des Eaux, Liege, Bulletin, no. 123:62-75, Mar 1961, 4 figs, 12 refs. DLC Gov. Pub. Sec.

1961

French

...In order to study the planning of eastern Belgium, a committee was faced with the water problem. A working group of this committee undertook the study of this question in the region Verviers-Eupen. The article gives the first results of a study concerning the inundation hazard in this region. The first part is devoted to the description and examination of the floods which occurred during the last 20 years. Of 3 local floods, 4 had most severe consequences. The data show that these devastating floods were due to: a) the occurrence of pouring rain storms. The thunderstorm on May 13, 1960 yielded 140 mm of rain within 45 min; b) the steep slope of the hillsides; c) the important extent of pastures; d) the convergence of several rivers at certain points; and e) the steep longitudinal slope of the lower part of the valley. The second part deals with the theoretical study of the different basins in the region. The computation of the flow in the basin was made by means of the Imhoff formula. The influences of the topographical conditions, of the slope gradient of the form of the basins, and of the plant cover are discussed. (AV)

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51. Poncelet, Lucien. Une Trombe sur Beauraing [Whirlwind over Beauraing, Belgium], Ciel et Terre, Brussels, 77(11, 12):560-69, Nov/Dec 1961, Photo. DAS M(05) C5c9.

51. (cont)

1961

French

...On the occasion of the publication in Ciel et Terre of a whirlwind photograph taken in the summer of 1961, the author gives a concise and clear description of the formation of this phenomenon. Whirlwinds, as distinct from cyclones, have a rotatory direction that is not necessarily governed by the direction of the Earth's rotation. Possible confusion with dust whirls in summer is to be avoided. (AV)

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52. Poppe, H. De windverdeling in de vrije atmosfeer boven Belgie. [Wind Distribution in the Free Atmosphere above Belgium], Belgium Regie des Voies Aeriennes, Service Meteorologique, Bulletin Trimestriel, No. 6/8:1-26, 1961, 12 figs, 13 tables, 5 refs. DAS M(05) N592me.

1961

Flemish

...Investigations of wind distribution in the free atmosphere on the basis of upper wind measurements made at the Royal Meteorological Institute in Uccle during a period of 8 years. The observed distribution is discussed and the data obtained are summarized in a series of tables and figures. The circular and elliptic laws are treated and the observed distribution is compared with the theoretical (circular and elliptic) distributions. The most important results are given, viz., a) the wind distribution in the free atmosphere above Belgium is positively non-circular; b) the wind distribution at any level is better defined by an elliptic law than by a circular one, and c) the elliptic distribution law permits simple approximations for any level although sometimes important departures are noted. (AV)

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53. Sneyers, R. Sur la probabilite des secheresses a Uccle et son influence dans la repartition statistique de la cote udometrique. [On the Probability of Droughts at Uccle and Its Influence in the Statistical Distribution of the Rainfall Amounts], Belgium Institut Royal Met. Contributions No. 61, 1960, Brussels. 3 tables, 3 figs. DAS M(055) B429 co, No. 61.

1960

French

...An estimation of the probability of a month without any precipitation is made with the use of the frequency distribution of the number of days with rain. This probability being also the one of a month with zero rainfall

53. (cont)

amounts; an attempt is made to take account of it in adjusting a probability function to the frequency distribution of the monthly rainfall amounts. For this purpose, the use of an incomplete T function or of a log-normal distribution function is unsatisfactory. On the contrary, an excellent fit is obtained by representing the data by a curve which on normal probability paper is a branch of a hyperbola. Theoretical considerations exist to justify such an adjustment. (Author)

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54. Sneyers, Raymond. Le hasard en meteorologie. [Chance in Meteorology], Ciel et Terre, Brussels, 76(5/6):145-165, May/Jun 1960, 11 figs, 9 refs. DAS M(05) 0569.

1960

French

...There are numerous applications in various fields of meteorology for the theory of probability. In this article, the author examines some meteorological problems in which the application of the random theory has largely stood the test of time. Notions of chance, of games of chance and of aleatory events, are briefly recalled. In the first part, after having explained the notions of probability, of random variable and of the law of probability, the author develops the adjustment of a law of probability. The adjustment of a law of probability comprises 3 distinct stages; the choice of the law of probability, the properly so-called adjustment and a criterion permitting the appraisal of the quality of the adjustment obtained. All these notions are illustrated by well chosen examples. These laws of probability make it possible to elaborate statistical forecasts and, more particularly, to estimate the return periods of certain determined climatic conditions. As an example, the author applies these laws to the determination of the return periods at Uccle of annual mean temperatures, of winter mean temperatures, of water amounts gathered in Dec, etc.. The 2nd part concerns the laws of probability when several variables are implicated; emphasis being on some particular applications. (AV)

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55. Sneyers, Raymond. La frequence des orages en Belgique. [The Frequency of Thunderstorms in Belgium], Belgium, Institut Royal Meteorologique, Publications, Ser. A, No. 22, 1961, 34 p, 2 figs, 21 tables (5 in appendix), 25 refs. DAS M(055) B429p Ser. A, No. 22.

55. (cont)

...Study of the statistical properties of the days with thunderstorm over Belgium. This study is based on a homogeneous series of observations made from 1930 through 1939 and 1946-1960. The author considers the probability laws which determine the frequency of thunderstorms and attempts to work out the possible existence of a regional variation about this probability. The existence of a seasonal regional variation in the frequency of thunderstorms is explained on the basis of the proximity of the sea. In the coastal region, thunderstorms are somewhat less frequent in spring, but more frequent in autumn. Thunderstorms seem, however, to be generally more prevalent over the central regions of the country. (ALS)

1961

French

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56. Sneyers, R. Le Temps en 1961. [The Weather in 1961], Belgium, Institute Royal Meteorologique, Pub. Ser. B, No. 36, 1962, figs, tables, (also issued in Ciel de Terre series), issues of 1962, 1963, 1964, 1965, 1966, 1967 available at DAS. DAS M(055) Series B, No. 36.

1962

French

...A detailed report on the weather of Belgium for each year including data and descriptions of general atmospheric conditions, winds, precipitation, temperatures, humidity, and cloudiness, plus month-by-month summaries of weather conditions, are given. In addition, the most distinctive element in each year is noted, i.e., 1965 had the highest annual rainfall recorded in Brussels since 1833; 1966 had higher than normal temperatures and little sunshine, and abundant rainfall, about 143% of the normal. (ALS)

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57. Sneyers, R. Sur la determination de la stabilite des series climatologiques [On the Determination of the Stability of a Climatological Series], Institut Royal Meteorologique de Belgique, Contributions No. 81, Uccle-Bruxelles, 1963, 44 p. DAS M(055) B429co.

1963

French

...Statistical properties of chronological observations are analyzed. As an example, thermic conditions at Bruxelles-Uccle from 1833 to 1960 are used. The results reveal climatic variations over this period. (DLB)

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58. Sneyers, R. Sur l'emploi de distributions normales tronquees en climatologie [Use of Truncated Normal Distribution in Climatology], Revue de Statistique Appliquee, Brussels, 12(2):85-94, 1964, 7 refs. Reprinted as Belgium, Institut Royal Meteorologique, Contributions No. 93, 1964. DAS M(055) B429co.

1964

French

...For certain climatological phenomena, the dates of the first and last days of occurrence are taken into account, for example, the dates of the first and last frost or those of the first and last snow. Due to the frequent departures in the dates of beginning and end of a period, these dates might practically be considered as independent variables and, consequently, the law of two variables might be deduced directly by combining the laws of probability governing the dates of beginning and end of the period, respectively. However, the author reveals the inconsistency of this method and, on account of the distribution of these phenomena, he investigated the laws of truncated normal distribution. He first considers the effect of any linear truncation on a normal population with several variables by computing first of all the function generator of the momenta of the truncated distribution and by deducing from this function the momenta of the 1st and 2nd order of the distribution considered. The formulas required to make the adjustment of such a distribution on the basis of the momenta provided by the series of observations are established. The application of this method is illustrated by an example: the distribution of beginning and end of the period the soil at Uccle is covered with snow at least 1 cm deep. (AV)

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59. Sneyers, Raymond. La Statistique des Precipitations a Bruxelles-Uccle [Precipitation Statistics for Brussels-Uccle], Institut Royal Meteorologique de Belgique, Contributions No. 94, Uccle-Bruxelles, 1964, 20 p. DAS M(055) B429co.

1964

French

...Statistical methods for comparing and computing precipitation are discussed. Examples of these methods are presented for Brussels-Uccle. (DLB)

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60. Sneyers, Raymond. La statistique de l'enneigement du sol en Belgique [Statistics of Snow Cover in Belgium], Archiv fur Meteorologie, Geophysik und Bioklimatologie, Serie B, Band 13/4, 1965, pp 503-520. DAS M(05) A673ab.

1965

French

...Six variates, chosen to characterize the snow cover at Bruxelles-Uccle, have been submitted to statistical analysis: the date of the first snow cover, the date of the last snow cover, the duration of the snow-cover season, the number of days with snow cover, the longest period of consecutive days with snow cover, and the maximum depth of the snow cover. Each variate has been tested against trend, probability functions have been adjusted, and their fit to the series of observations tested. Ordinary, and modified, normal and double exponential laws have been used and the fact that the absence of a snow-cover season must have the same probability as a number of days or a longest period of consecutive days with snow cover, both equal to zero, and has been taken into account. Owing to its length, the series of observations at Bruxelles-Uccle constitutes the basic reference for extrapolation of snow-cover conditions in Belgium. (Author)

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61. Sneyers, R. L'epaisseur maximale de la couche de neige en Belgique. [The maximum Depth of Snow Cover in Belgium], Inst. Royal Met. de Belgium, Uccle, International Congress on Alpine Meteorology, 9th, Brig, Switzerland, Sep 14-17, 1966, Wissenschaftliche Abbendlungen, Zurich, 1967, pp 125-131, tables, refs, eqs, French, German and English summaries, p 125. (Switzerland, Meteorologische Zeutralanstalt, Veroffentlichungen No. 4). DAS M(055) S9792ve No. 4.

1967

French

...The statistical properties of the maximum depth of snow cover at the Belgian airports are given by means of a double exponential distribution function, the parameters of which are linear functions of the altitude of the airports above mean sea level. The standard error associated with the estimation of the percentiles obtained in that manner are calculated and the validity of the law for the whole Belgian climatological network is tested. POR 1947-1965. (Author)

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62. Sneyers, R. Les Proprietes Statistiques De L'enneigement Du Sol En Belgique [Statistical Properties on the Snow Cover of Belgium], Pub. Series A, No. 63, Institut Royal Meteorologique De Belgique, Brussels, 18, 1967, 34 p. DAS M(055) B429p.

...The snow cover in Belgium has been characterized by 6 variates: the date of the first snow cover, the date of the last snow cover, the duration of the snow lying season, the number of days with snow lying, the longest period of consecutive days with snow lying and the maximum depth of the snow cover.

The data gathered at the Belgian airports have been investigated and probability functions have been adjusted. Moreover the accuracy of the estimation of the parameters of these probability functions has been improved by taking into account:

1967

French

(1) the correlation between regional data and the corresponding observations of Bruxelles-Uccle for which the considered distributions are well-known

(2) the existence of linear relationships between the values of these parameters and the variation of altitude in Belgium

Several tables on snowfall statistics with POR at 194?-1966. (Fr. Author Abs.)

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63. Sneyers, Raymond. De l'utilisation des series breves dans la description du climat d'une region: une application (aux) conditions de l'eneigement du sol en Belgique. [Use of a Short Series in the Description of the Climate of a Region: An Application to the Snow-Covered Conditions of the Ground in Belgium], International Association of Scientific Hydrology, Publication No. 78, 1968, pp 274-281. Tables, refs, eqs. French summary p 274. (I.A.S.H., Geochemistry, precipitation, evaporations, soil-moisture, hydrometry: reports and discussions). DAS M(06) I611g S. Hyd. No. 78.

1968

French

...The principal reefs on which the description of climate on a regional scale founder is the shortness of the series of observations one has at his disposal in studying it, and the effect that this shortness has on limiting the accuracy with which the necessary parameters can be estimated. The inconvenience can, however,

63. (cont)

be notably reduced if one possesses a long series of observations for one central station, and if the considered region behaves in a sufficiently homogeneous manner with regard to the meteorological conditions that determine its climate. Under these two conditions, one can predict that a good correlation exists between the observations of the central station and those at the regional stations, and that, moreover, the regional variations of the climatological parameters are closely related to geographical coordinates, such as altitude, distance from the sea, or variations in latitude. Thus, one has a double means of reducing the error of estimating the considered parameters. For example, results are given of a study on snow cover in Belgium and on the effectiveness of the method. In this particular case, it was possible to obtain good results for the regional study of precipitation. (Author/DBK)

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64. Sneyers, Raymond. On a Special Distribution of Maximum Values. Monthly Weather Review, Wash., D.C., 88(2):66-69, Feb 1960, 2 figs, 2 tables, 4 refs, 8 eqs. DAS M(05) U587n.

1960

English

...The classical extreme-value theory does not give a good account of the distribution of maximum rainfall intensities in Belgium. Reasons are given for the use, in this case, of a probability function defined by a double exponential whose argument is a function represented by a curve with 2 asymptotes. The application of such a probability function, when the curve is a branch of a hyperbola, to the maximum rainfall in 1 min at Uccle, leads to a good fit. (Author)

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65. Turf, J. La mesure continue de la radioactivite naturelle de l'air [The Continuous Measurement of Atmospheric Radioactivity], Institut Royal Meteorologique de Belgique, Contributions No. 84, Uccle-Bruxelles, 1963, 14 p. DAS M(055) B429co.

1963

French

...This study is in two parts. Part I describes the methods used and Part II explains the variations in radioactivity. The Belgian town of Dourbes is used as an example for comparison of radioactivity with

65. (cont)

various meteorological parameters. Variations in radioactivity are considered as functions of temperature, pressure, wind, rainfall, and relative humidity. (DLB)

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66. USAF, AWS, 2WW. FRELOC Weather Alternates. Applied Climatology Report, 2W-1509, 2WW(MAC), APO New York, 09332, Nov 1966, 7 p. IPB Files.

1966

English

...Contains percentage of time of specified ceiling and visibility at European stations. The Belgian stations are: Kleine Brogel, Beauvechain, Brustem, and Florennes. (DLB)

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67. Van Beneden, G. Le cycle de l'eau en Fagne: origine, etapes et destin de l'eau sur le plateau des Hautes Fagnes [The Water Cycle in Fagne. Origin, Stages, and Destiny of the Water on the Hautes-Fagnes Plateau], Centre Belge d'Etudes et de Documentation des Eaux, Liege, Bulletin, 15(218):13-19, Jan 1962 and 15(219): 78-81, Feb 1962, 46 refs. DLC Gov. Pub. R. Rm.

1962

French

...A summary of the observations and knowledge so far acquired of the features of the water-bearing strata and ground waters of the Hautes-Fagnes plateau of Belgium. This high region, strewn with peat bogs and marshes, has a rainy and moist climate. The rainfall supplies the surface layers; the sphagnum contributes to the preservation of underground moisture and promotes percolation towards the deep layers. In summer the sphagnum evaporates its water and the peat dries up; in this season the influence of dew is noticeable. The peat bogs constitute a perfect regulator of the hydrologic regime in two respects: 1) on the regime of the brooks which rise in the bog and 2) on the water-bearing strata. The supersession of peat bogs by conifer plantations modifies the water regime of the surface layers and is prejudicial to the feeding of underground water. Through the increase in water requirements, the necessity of a permanent supply of underground water arises. (AV)

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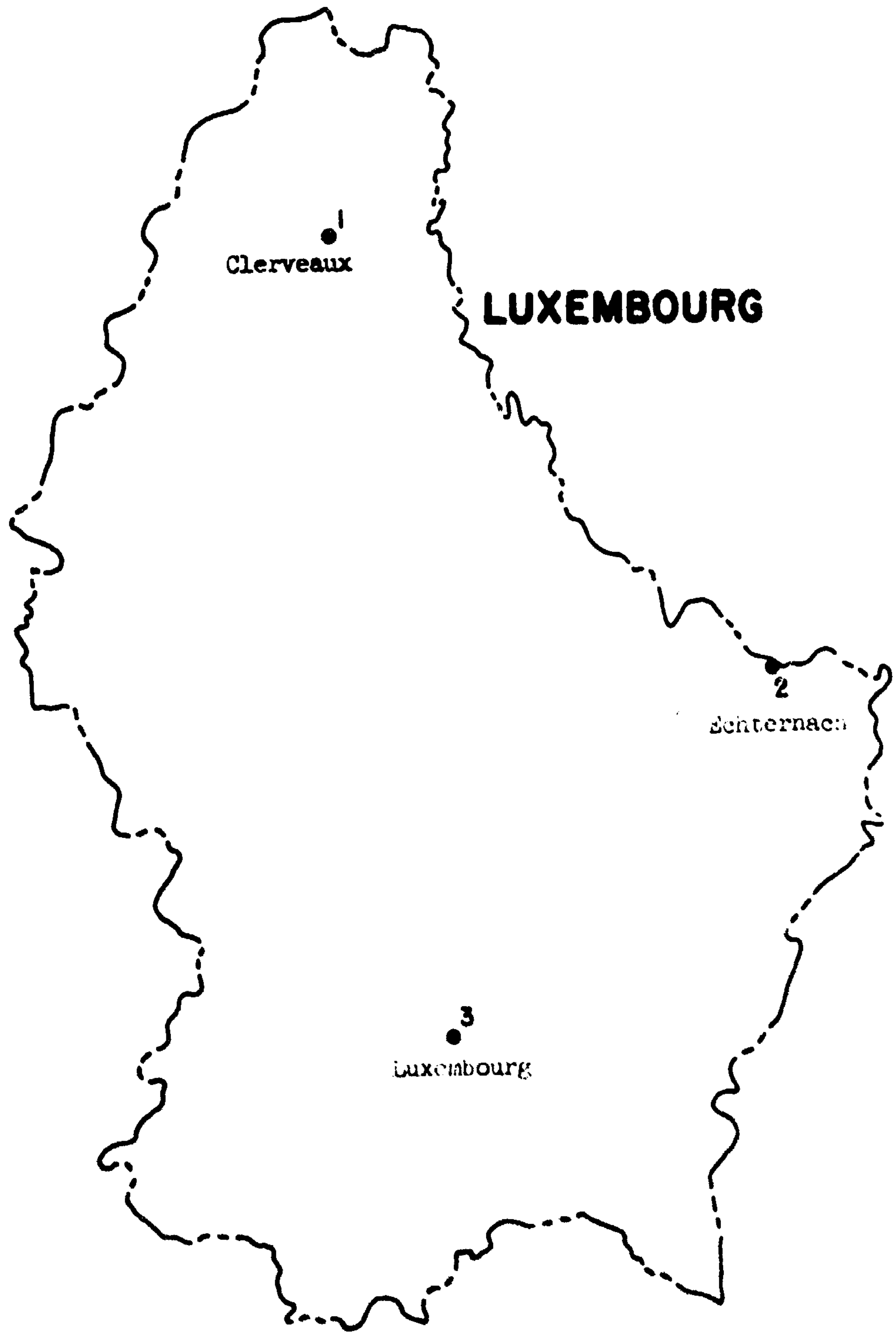
68. Van Isacker, J. Theoretical and Experimental Research on Numerical Weather Prediction in Belgium. (In: International Symposium on Numerical Weather Prediction, Tokyo, Nov 1960, Proceedings, Tokyo, Mar 1962, pp 9-13, fig, 3 refs, 10 eqs). DAS M09.314 161sym.

1962

English

...A large electronic computer will be available in Belgium for meteorological purposes in 1962 only. Before this date, the IBM 704 computer at Paris is used for research and preparation of programs. These researches progress in 3 main directions: 1) improvement of the numerical methods for solving the forecasting equations, 2) building of a new atmospheric model to be used for weather forecasting, 3) study of the general circulation by the systematic use of Fourier transformation to show the scale effects. (Author)


LUXEMBOURG
1
Clerveaux
2
Echternach
3
Luxembourg

LUXEMBOURG

69. Arlery, R. La Duree d'Insolation (1946-1960) en France [The Duration of Insolation in France], Monographies de la Meteorologie Nationale, Ministere des Travaux Public et des Transports, Paris, Oct 1961, 24 p, tables. DAS M(055) F815mo.

1961

French

...Insolation data for Luxembourg are included. Monthly and annual totals (1946-1960) of hours of insolation are tabulated. (DLB)

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70. Luxembourg. Annuaire Statistique 1969 [Annual Statistics for 1969], Grand Duche de Luxembourg, Ministere de L'Economic Nationale, Service Central de la Statistique et des Etudes. Economiques, 200 p, tables, (annual series 1938, 1950, 1955, 1960 and 1963 to 1969 available). Census L97 A84-1969.

1969

French

...Part A includes territories and climate and lists mean annual pressure, temperature, relative humidity, precipitation, insolation, and wind for POR 1950-1966. Mean monthly values are given for 1968. Stations are Mont Saint-Lambert, Clerveaux, and d'Echternach. Bar graphs for temperature and precipitation are also included. (ALS)

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71. Luxembourg, Bulletin Statistique (Previously Bulletin Economique) [Statistical Bulletin], Public par l'office de lat Statistique Generale, Series No. 1, 1950 to date, annual issues, Luxembourg. DLC HC 330 .A4c5.

1950-68

French

...Contains summarized data for 3 stations in Luxembourg. Annual averages are available back to 1950 (1960 to date have monthly averages). The information includes: pressure; temperature (mean, absolute maximum and absolute minimum);

71. (cont.)

relative humidity; rainfall (total, maximum for one day and days with rain); insolation; occurrences of temperature greater than 25°C; occurrences of temperature less than -5°C; and prevailing winds. (DLB)

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72. Luxembourg, Service de la meteorologie et de l'hydrologie Grand-Duche' de Luxembourg, Rapport sur les Activites Climatologiques Nationales 1969 [National Reports on Climatological Activities in Luxembourg] Administration des Services Techniques de l'Agriculture, Rpt. to WMO, Luxembourg, 11 Jul 1969, 1 p. IPB Files.

1969

French

...A short description of climatological activities and research in Luxembourg. This report to WMO lists the available publications and station networks. (DLB)

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73. Wallace, J.A. An Annotated Bibliography on the Climate of Luxembourg. U.S. Dept. of Commerce, Weather Bureau, WB/BC-53, Wash., D.C., Jun 1962, 12 p. AD 660873.

1962

English

...This bibliography consists of 22 sources containing meteorological and climatological data for Luxembourg. The initials DWB and DLC used in the abstract titles refer to the U.S. Department of Commerce, Weather Bureau Library, Washington, D.C. and the Library of Congress, Washington, D.C., respectively. (Author)

Station List

1. Amsterdam
2. Bolsward
3. Castricum
4. Chaam
5. De Bilt
6. Den Helder
7. Eelde
8. Eindenhoven
9. Flushing (Vlissingen)
10. Gilze (-Rijen)
11. Heerenveen
12. Hellevoetsluis
13. Helmond
14. Hoek van Holland
15. Hulst
16. Kootwijk
17. Leeuwarden
18. Oudenbosch
19. Rilland
20. Rotterdam
21. Schipol
22. Ten Boer (Groningen)
23. Terband
24. Tricht
25. Venlo
26. Vlissingen
27. Willemstad
28. Winterswijk
29. Woensdrecht
30. Wolphaartsdijk (Oostkerke)

NETHERLANDS

74. Barad, Morton. Some Notes on Geophysics in the Netherlands. Office of Naval Research, Rpt. No. ONRL-27-68, London, May 1968, 10 p. AD 832550. IPB Files MF.

1968

English

...This report is a summary of information gathered during a visit to the Royal Dutch Meteorological Institute in late March of 1968. It deals mainly with the Institute's research programs in meteorology; seismology, geomagnetism, and ionospheric studies; and oceanography. It also includes a presentation of the program of education for geophysicists at the University of Utrecht. (Author)

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75. Bijvoet, H.C. and Schmidt, F.H. Het weer in Nederland in afhankelijkheid van circulatietypen. Deel II. Bewerking van de waarnemingen van de Hooft-stations en van aerologische waarnemingen van De Bilt en Emden/Jever [The Weather in Holland Depending on Circulation Type. Pt. II. Preparation of the Observations of the Chief Stations and from Aerological Observations from De Bilt and Emden/Jever], De Bilt, K. Ned. Met. Inst., Wetenschapp. Rapp. 60-1, 1960. 126 p (see also Pt. I 58-4, 1958). IPB Files.

1960

Dutch

...Tables of data for principal surface elements (1881-1955) of the synoptic climatology of a number of Dutch stations according to circulation type. (ALS)

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76. Boer, J.H. Een onderzoek naar het optreden van buien en onweer in Zuid-West-Nederland [Investigation into the Occurrence of Squalls and Thunderstorms in Southwest Netherlands], Hemel en Dampkring, The Hague, 63(7/8): 223-229, 1965. Figs. DAS M(05) N469h.

76. (cont.)

...The investigation into the behavior of squalls and thunderstorms in connection with the repartition of land and sea in the southwest of the Netherlands is still in an initial stage. Owing to the voluntary collaboration of a large number of observers, all the possibilities for obtaining a precise insight in this matter are present. The intensity variation of thunderstorms is continually recorded at Woensdrecht and Wolphaartsdijk. It is not yet quite certain whether squalls are influenced by estuaries or not. But there is an evidence that squalls occur by preference in some special regions, e.g., in a zone just behind the coast line from Zeeuws - Flanders via Walcheren to Schouwen and along a line going from Hulst via Rilland-Bath and South Beveland to Willemstad. The observation network, program, and treatment of observations are described. (AV)

1965

Dutch

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77. Bruggerman, A.G. Effect of Dry Periods on the Moisture Content of the Soil in some Dutch Polders. International Association of Scientific Hydrology, Publication No. 53: 442-450, 1960. 11 figs. DAS M(016) I61lg.

...Where the soil is cultivated, the amount of moisture in it which is normally available for the plants diminishes quickly in periods of summer drought. The course of the decrease and its limit in extreme cases depend on many factors such as the nature of the soil, vegetation, the duration of the drought, etc. Therefore, its effect on water control and on crops varies widely. Practical data on the decrease in the moisture content of good, well-treated soils in extremely dry periods may be of importance when solving certain problems of water control. (Author)

1960

English

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78. Buma, T.J. A Statistical Study of the Relationship between Visibility and Relative Humidity at Leeuwarden. American Meteorological Society, Bulletin, 41(7):357-360, Jul 1960. 5 figs, 2 tables, 4 refs. DAS M(05) A512b.

...From statistical data, it is found that very marked differences in visibility at a given relative humidity may occur at a station if the surface wind direction is taken into account. At Leeuwarden, the visibility is much lower

1960

English

78. (cont)

for wind from land than for wind from the sea at the same relative humidity. It is shown that this is due to the condensation nuclei which may be more numerous and more hygroscopic in continental air than in maritime air; this result differs somewhat from that published by JUNGE. Comparison of our results with those of APPLEMAN concerning Frankfurt shows good agreement of Frankfurt and Leeuwarden for maritime air, which was not to be expected. (Author)

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79. Buma, T.J. Fog at Leeuwarden, the Netherlands. Meteorological Magazine, London, 89(1055):161-167, Jun 1960, 3 figs, 3 tables, 5 refs, eqs. DAS M(05) G786m.

1960

English

...The diurnal variation of fog during a period of eight years at Leeuwarden is investigated. It is found that, in general, the diurnal and seasonal variation is similar to that found by N.E. DAVIS concerning London Airport. The connection of fog with the surface wind direction is examined and it is shown that the probability of fog is relatively high in the case of winds from a southerly direction, partly due to the influence of the water areas south of the station. (Author)

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80. De Fluiter, H.J., Van de Pol, P.H. and Woudenberg, J.P.M. (eds), Fenologisch en faunistisch onderzoek over boomgaardinsekten [Phenological and Faunistic Investigations on Orchard Insects], Netherlands. Meteorologisch Instituut, Mededelingen en Verhandelingen, No. 83, 1964, 220 p, figs, tables, refs, English summary at end of each section. DAS M(055) N469m No. 83.

1964

Dutch

...The contents of this monograph include the following, viz: the biology and development of orchard lepidoptera; the influence of weather on the development and activity of the various lepidoptera species concerned and phenological data for these organisms; climatological data and meteorological conditions within the orchards; an analysis of the weather in the Netherlands during the years 1953-1957. (ILD)

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81. Deij, L.J.L. De uitzonderlijkheid van lente en zomer 1959 in klimatologisch-statistisch opzich [The Exceptional Spring and Summer of 1959 from the Climatological-Statistical Point of View], (Koninklyk Nederlands, Met. Inst.) Nederlandse Central Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek. Commissie voor Hydrologisch Onder-zoek, Verslagen en Mededelingen, No. 7:24-45, 1962, 10 figs, 5 tables, 2 refs. English summary pp 24-26. DLC TD227 . N45.

1962

Dutch

...The exceptional meteorological conditions in 1959 are discussed. Mean values for the whole country and "normals" (1921-50) of a number of meteorological elements for May to Sep 1959 are tabulated. Thirty-year "normal" isohyets and isopleths of evaporation from a free-water surface, computed by PENMAN's method, for 12 stations are shown on maps. These and other maps shown for 1959 are discussed. Values recorded at the De Bilt station and computed frequencies of precipitation minus evaporation (P-E) and of P.0.65 E for 1959 and for other dry years in this century are discussed and presented in tables, graphs, and maps. It is concluded that firm conclusions as to extreme values of P-E can not be based on a 50-yr period of records. (DBK)

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82. De Jong, J.J.G. De hagelbui van 28 mei [The Hailstorm on May 28], Hemel en Dampkring, The Hague, 59(10):231-234, Oct 1961, 3 figs. DAS M(05) N469h.

1961

Dutch

...On May 28, 1961, an exceedingly intense hail shower was observed at Terband, village in Friesland; the hail cover was 5 to 10 cm thick and important damage was caused to vegetation. The article surveys the weather outlook on May 27-28 over Friesland; a chart shows the hailfall distribution over the area under view, together with the thunderstorm phenomena, and a graph shows the precipitation amounts in mm for Heerenveen where between 14.05 and 14.52 hr, a 10-mm precipitation was recorded i.e., an intensity of 13 mm/hr. The zone affected by this exceptional hail shower was roughly 100-200 m wide. (AV)

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83. De Jong, J.J.G. Waterhoos trok juist over regenmeter (And Reply by B. Zwart) [A Water Spout which Passed Exactly over a Rain Gauge], Hemel en Dampkring, The Hague, Vol. 67, No. 1, 1969, pp 18-19. DAS M(05) N469h.

83. (cont)

...On July 14, 1968, a shower-line extended from the southwest to the northeast over the Netherlands. In Bolsward a waterspout passed over a rain gauge which recorded 25 mm of precipitation in 6 minutes. This amounted to an intensity of 4.2 mm/min. The highest precipitation intensity in the Netherlands hitherto recorded was between 3.1 and 4.7 mm/min over a period of 1½ minutes. An actual tornado was reported by an observer as having travelled from Afsluitdijk to Bolsward. The author considers the questions of whether a tornado actually passed over the rain gauge at Bolsward and whether the registered rainfall intensity actually indicates a record. The possibility that waterspouts retain water following their formation over a water surface is considered; such water is not rainwater. Since the distance between Cape Afsluitdijk and Bolsward is about 10 km, it is not likely that the tornado could have retained its water over this distance. The intense rainfall reported on July 14 should be regarded as the result of a cloud burst. (ILD)

1969

Dutch

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84. Den Tonkelaar, J.F. 10 jaar zonneschijn in Nederland [Sunshine in the Netherlands over a 10-year Period], Hemel en Dampkring, The Hague, 62(6):129-133, Jun 1964. Figs. DAS M(05) N469h.

...The annual sunshine average of 1500 h for the Netherlands is small in comparison with the 3000 h for the Mediterranean borders. Nevertheless, marked differences in solar climate are stated for the various regions of the Netherlands. These differences have been proved by continuous sunshine recordings made at about 25 stations since 1953. These 10-yr recordings showed that sunshine prevailed in the coastal regions with a maximum for the islands of Zealand and South Holland and in the Den Helder region. A figure shows that the largest measured annual difference of 235 h was reached between Flushing and Winterswijk. The sunshine duration decreases towards the east. Considering winter and summer half-years, it is stated that during the winter half-year, the sunshine duration was most important in the southwestern part of the Netherlands, with markedly less sunshine in the Wadden Zee islands; the causes of these variations are discussed from the point of view of location and weather. As concerns the summer half-year, the sunshine duration decreased from west to east with a maximum for the delta area, the western Wadden Zee islands, and North Holland. The causes of this sunshine distribution are dealt with. (AV)

1964

Dutch

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85. de Wiljes, H.C. and J.C.A. Zeat. The Influence of Climate upon the Number of Weather-Working Hours in Combine Harvesting in the Netherlands. Arch. Met. Geoph. Biokl., Ser. B, 16, 1966, pp 105-114. DAS P Col.

...Over the years 1964, 1965, and 1966, the relationship between the possibility to combine harvest and the rainfall has been summarized in a linear regression equation: $y = a + b_1x_1 + b_2x_2$, with y = mean number of weather-working hours per day per half-monthly period, x_1 = mean daily rainfall per half-monthly period, x_2 = number of dry days per half-monthly period.

1966

English

For chosen percentiles of the frequency distribution of y, the corresponding number of weather-working hours in the same period can be estimated for future years. Taking the (two dimensional) frequency distribution of x_1 and x_2, as fixed, confidence intervals for the estimated number of weather-working hours can be calculated. (Pt. Author Abs.)

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86. Dorrestein, R. Wind and Wave Data of Netherlands Lightvessels since 1949. Netherlands. Meteorologische Instituut, Mededelingen en Verhandelingen, No. 90, 1967. 123 p, tables, refs. English and Dutch summaries pp 121-122. DAS M(055) N469m No. 90 Ser. A.

...Wind and wave data collected every 3 hours since 1949 by Netherlands lightvessels are listed in frequency and other tables. The method of preparation of these tables is given and a summary of them can be found in par 1.6 of the text. An interpretation of some of the data is given. Relative frequencies (percentages of observations) of winds of force 4 and more, 6 and more and 8 and more, respectively, for the years 1949-1957 were compared with those recorded by the Netherlands lightvessels during 1910-1939 and with wind data from other sources (par 2.2.2). An increase in the frequency of wind forces 4 and more in all seasons, and an increase in the frequency of wind forces 6 and more in autumn and winter is indicated. The comparison supports the idea that some of the (mostly small) differences between frequencies of different lightvessels are real, that is, caused by the differences in ship positions: the lightvessel "Texel" may have a little higher frequency of gales than "Goeree" and "Terschellingerbank", especially in autumn and winter;

1967

English

86. (cont)

"Goeree" shows a lower annual variation in the wind frequencies than the northern lightvessels. Other differences are probably due to slight systematic differences between the observers on board the different lightvessels. A similar statement can be made for the frequencies of wave heights in excess of various values (par 2.3.2 and par 2.5.2). The highest wind force reported during the 15 years 1949-1963 inclusive was 11 (violent storm) for "Goeree" (on 6 occasions) and for "Texel" (on 9 occasions), and 12 (hurricane) for "Terschellingerbank" (on 2 occasions). The maximum significant wave height experienced by any of the 3 lightvessels in these years was probably 7 to 8 m. (Author)

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87. Dorrestein, R. Einige Klimatologische und hydrologische Daten fur das Ems-Estuarium [Some Climatological and Hydrological Data for Ems estuary], Nederlandsch Geologisch-Mijnbouwkundig Genootschap, The Hague, Verhandelingen: Geologische Ser. 19:39-42, 1960, 4 tables. DLC QE1.N3492.

1960

Dutch

...This report consists mainly of climatic and hydrologic data collected at Borkum and Emden. Atmospheric and hydrospheric climates are briefly discussed. (EZS)

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88. Feteris, Pieter J. Statistical Studies on Thunderstorm Situations in the Netherlands. J. of Appl. Met., Vol. 4, No. 2, Apr 1965, pp 178-185, 15 refs, 10 tables. DAS M(05) J86joa.

...Records from a network of volunteer thunderstorm observers in the Netherlands are used with routine synoptic and upper-air data to investigate relations between storm severity and almost simultaneous (just prior) meteorological parameters. The latter are derived from fields of the meteorological variables. The X^2 test and screening regression show that the ratio of storms associated with lightning damage to the total number of storms increases significantly with the surface wet-bulb potential temperature (θ SW) and the instability index (ΔT), but the relations are rather weak. Hail frequency increases monotonically with the instability index, but is bimodally distributed with respect to the potential temperature. Hail-size-windshear relations are barely significant. Additional information provided by parameter combination over that in a single best predictor is limited by fairly strong correlations between wind velocities at 700 and 500 mb as well as by correlation

1965

English

88. (cont)

among the surface wet-bulb potential temperature, the stability index, and the saturation deficit (D). Stratification of the data according to synoptic situation and the use of nonlinear functions of the variable improve some of the relations. (Author)

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89. Grimes, Annie E. and Weight, Marie L. Annotated Bibliography on Climate Maps of the Netherlands. Wash., D.C., U.S. Weather Bureau, Jan 1961. 7 p, 24 titles, annotated. DAS M(016) U587ne.

1961

English

...The 24 maps listed (with map scales) are found in the Library of Congress, Dept. of Agriculture Library, and in the Weather Bureau Library. (NN)

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90. Hanssen, A.W. Objective Method for Forecasting Thunderstorms in the Netherlands, J. of Appl. Meteorology, Boston, 4(2):172-177, Apr 1965, figs, refs, eqs. DAS M(05) J86joa.

1965

English

...An objective method has been developed for forecasting the occurrence of thunderstorms. Four parameters have been selected, one of which has been derived from the 500-mb contour pattern. The other 3 parameters (atmospheric pressure, stability, and humidity) are related to the center of the forecast area. The method, which is based on many observations (~ 1000), can readily be applied for the day following the 0000 GMT aerological sounding if the 500-mb flow pattern is sufficiently known. From this 500-mb flow a parameter has been derived that is combined with atmospheric pressure at De Bilt defining a parameter X. By combination of a stability parameter and a moisture variable - both of which have been derived from the aerological sounding at De Bilt - a 2nd parameter, Y, has been defined. Finally, the probability of the occurrence of thunderstorms can be obtained as a function of X and Y. The system has been designed for the summer season and is based on 11 years (1949-1959, inclusive) of dependent data. It was tested for 3 years (1960-1962, inclusive) of independent data yielding a skill factor I = 0.48. The method shows more than 2.5 times the skill factor of the persistence forecast. (Author)

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91. Hanssen, A.W. and W.J.A. Kuipers. On the Relationship between the Frequency of Rain and Various Meteorological Parameters. K.N.M.I. Mededelingen en Verhandelingen No. 81. Staatsdrukkerij- en Uitgeverijbedrijf 'S-Gravenhage 1965. 65 p, 8 refs. DAS M(055) N469m No. 81 Ser A.

1965

English

...A relation between the frequency of rain and various meteorological parameters has been investigated with the aid of surface data of the period 1901-1951 and aerological data of the period 1945-1952. Owing to a necessary restriction of the number of parameters, a selection has been made on the basis of a quantitative criterion which has been developed for this purpose. Three parameters, viz., persistence, atmospheric pressure, and direction of surface wind are related to the local frequency of rain. By combining this frequency with a humidity parameter referring to the 850- and 700-mb levels, the areal distribution of the occurrence of rain can be determined. (Pt. Author Abs.)

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92. Levert, C. Een zeer langdurige en zeer zware regen [A Very Heavy Rain during a Long Period], Hemel en Dumpkring, The Hague, 59(5):140, May 1961-Jul 1961. DAS M(05) N469h.

1961

Dutch

...A description of a heavy rainfall at De Bilt on June 6, 1961. The pluviograph recorded 49.8 mm of water in 422 min or an average intensity of 0.118 mm/min for the total duration. The device used for rainfall intensity measurement recorded a max of 2.4 mm/min (record: 4-5 mm). The heavy rain continued during 40 min (avg intensity: 1 mm/sec) and gave 40.8 mm of water. The max value between 1926 and 1961 was 28.5 mm in 28 min. The wind velocity was only 2 m/sec and the trajectory of the drops was nearly vertical. The De Bil meteorological park contains 15 rain gages. The lowest value recorded was 54.3 mm and the highest value 56.9 mm for this rain. (AV)

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93. Levert, C. Een Analyse der Pluviogrammen te De Bilt (1926-1955) Volgens Grove Kenmerken der Regens [An Analysis of the Pluviograms of De Bilt (1926-1955) with Regard to the Principal Characteristics of Individual Rains], Koninklijk Nederlands, Meteorologisch Instituut, De Bilt 1962. W.R. 61-2, 115 p, many tables. IPB Files.

93. (cont)

1962

Dutch

English

...Tables are included covering frequency distribution of dry periods, number of rainy days, heavy rain days, numbers of rains by months, seasons, years; downpours; intense rains. Rainfall is also broken down by minutes, hours, days, months, year, and decades. POR (1926-1955). (ALS)

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94. Levert, C. Meteorologische und statistische Betrachtungen Uber die interdiurne Veranderlichkeit [Meteorological and Statistical Consideration of Interdiurnal Variability.], Archiv fur Meteorologie, Geophysik und Bioklimatologie, Ser. B., Vienna, 10(3):412-421, 1960. 2 figs, 2 tables, 5 refs. German, English, and French summaries pp 412-413. DAS M(05) A673ab.

1960

Dutch

...Practical questions as to the interdiurnal variations of temperature and humidity forced us to make a thorough study of the interdiurnal variability (I.V.). First of all, we examined which quantity could represent the I.V. best. The I.V. proved to depend on the situation of the station and to possess a highly-pronounced annual variation. Considerations of reliability required numerical knowledge of the autocorrelation of the time series of the daily values of temperature and humidity. Coefficients of autocorrelation of orders 1, up to and including 6, were computed. The time series of the I.V. shows negative autocorrelation. In order to facilitate answering practical problems, a nomogram was constructed. A second nomogram makes it possible to estimate, for instance, the minimum length of the basic period required in order that the answer found with the help of the first nomogram possesses a prescribed reliability. (Author)

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95. Meijer, A.H. De veranderlijkheid van de luchtdruk in De Bilt. [Variability of Atmospheric Pressure at De Bilt.] Hemel en Dampkring, The Hague, 58(2):37-42, Feb 1960. 2 figs. DASM(05) N459h.

19[illegible]

Dutch

...According to C. BRAAK the most important characteristic of pressure in Holland is its great variation. December shows a variation maximum (45 mb); a minimum with 25 mb. During the period 1903-1952, the daily maximum and minimum of the pressures have been noted; the difference

95. (cont)

between the two values gives the diurnal amplitude of the pressure, V24. A figure gives the mean value of V24 of the meteorological year, month-by-month. A great difference is stated between Jan and Jun. Another figure shows the number of days with great and small variation of V24. The article ends by showing some considerations on relation between V24 and atmospheric pressure. (AV)

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96. Netherlands, (Central Bur. voor de Statistiek). The Netherlands Central Bureau of Statistics, Jaarcijfers voor Nederland 1959-1960 [Statistical Yearbook of the Netherlands 1959-1960], Uitgeversmaatschappij W. De Haan, N.V., Feist 1962. 402 p. Mostly tables. Census N38 A84, (1940-1964 available).

1962

Dutch

...Part A, Area, Territory, and Climate, contains a provincial map, a soil map, and summarized climatic data for the following stations (De Bilt, Den Helder, Vlissingen, Eelde, Vliegoeld Zuid-Limburg). Data include: mean annual precipitation, hours of sunshine, atmospheric pressure, relative humidity, highest temperature, number clear days, overcast days, precipitation days, snow days, thunderstorm days, and wind speed and direction. All mean annual values. POR - generally 30 years. (ALS)

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97. Netherlands. Meteorologisch Instituut, Regenwaarnemingen, 1962. [Precipitation, 1962], Its Uitgave 117, pub. 1963. Entirely tables. DAS M82.1/492 N469r.

1963

Dutch

...Since 1932, daily precipitation data recorded at 300 stations in the Netherlands have been published in addition to the "yearbook" containing the totals for each month. The present series is compiled by machine tabulation and photo reproduction. The monthly tables contain the daily amounts of precipitation, together with the amounts per decade and per month, at all stations of the Royal Netherlands Met. Inst., where in 1962 measurements were made regularly. The total yearly amounts are given in separate tables. A chart shows the distribution of the stations over the country which is subdivided in 15 natural regions which are tabulated. (AV)

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95. (cont)

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96. Netherlands, (Central Bur. voor de Statistick). The Netherlands Central Bureau of Statistics, Jaarcijkers voor Nederland 1959-1960 [Statistical Yearbook of the Netherlands 1959-1960], Uitgeversmaatschappij W. De Haan, N.V., Feist 1962. 402 p. Mostly tables. Census N38 A84, (1940-1964 available).

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97. Netherlands. Meteorologisch Instituut, Regenwaarnemingen, 1962. [Precipitation, 1962], Its Uitgave 117, pub. 1963. Entirely tables. DAS M82.1/492 N469r.

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100. Netherlands. Commissie Meteorologische Voorlichting voor Straalvleigtuigen, Meteorologisch Instituut: Climatology of Amsterdam Airport (Schiphol), Mededelingen en Verhandelingen, No. 87, 1966, 's Gravenhage. 155 p, figs, tables. DAS M(055) N469c No. 81 Ser. A.

1966

English

...The detailed study of the climate of the Amsterdam Airport (Schiphol) contains a brief note on the climate of the Netherlands and a series of tables on the individual weather variables, based upon the hourly observations made during the period Jan 1, 1949 through Dec 31, 1963, providing 131,472 observations in total. The tables include the following: horizontal visibility and height of the cloud base; horizontal visibility and height of the cloud base in relation to the surface wind; duration of fog, horizontal visibility and height of the cloud base during conditions at which horizontal visibility is estimated at the observer's site below 800 m and/or height base of the lowest clouds covering more than 4/8ths of the sky is below 60 m; surface wind; atmospheric temperature; relative humidity; precipitation; and a survey of the most important "weather" types. There are also in cluded, in an appendix, graphs on the percentage frequency of horizontal visibility below 800 m and/or a height of the cloud base below 60 m for month of the year, for month of the year and time of day, and, for 90 m, for different wind directions for each season and for 4 different periods of the day; and graphs giving the percentage frequency of wind speeds as a function of wind direction for each season and for 4 different periods of the day, etc. (ILD)

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101. Netherlands. Meteorologisch Instituut, Meteorologische en oceanografische aspecten van stormvloeden op de Nederlandse Kust. [Meteorological and Oceanographic Aspects of Storm Surges on the Netherlands Coast], The Hague, Netherlands, 1960. 200 p, numerous tables, refs at end of each chapter, numerous eqs. DAS M15 N469me.

1960

Dutch

...This book presents 13 papers dealing with the meteorological and oceanographic aspects of storm surges on the Netherlands Coast. The papers are arranged in three sections. The first section contains two papers which concern the gale of Feb 1, 1953. The first paper gives an analysis of the meteorological and synoptic aspects of the gale and the second outlines the analysis of the observed water heights. Seven papers are given in the second section which

101. (cont)

discuss the meteorological and statistical features of the severe gales. Section three consists of four articles which deal with the wind effects on sea levels along the Netherlands Coast. All the papers are extensively illustrated by synoptic charts, recorder records, graphs, trajectory charts, tables, etc. (IS)

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102. Netherlands (Kingdom 1815-) Meteorologisch Instituut, Detailanalyse van Pluviogrammen [Detailed Analysis of Records of Pluviographs], K.N.M.I., De Bilt 1966. 71 p, 2718 tables. DAS M77.21/492 N469de deel A.

1966

Dutch

...This publication, mostly tables, contains frequency distributions of the amounts of precipitation in periods of 5 to 660 mins at De Bilt, 1928, 1933, 1951-1960. (ALS)

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103. Netherlands. Meteorologisch Instituut. Synoptic and Upper Air Observations in the Netherlands, Vol. 11, 1966. Issued De Bilt, 1967. 365 p. Almost entirely tables. DAS M06.7/492 N469s.

1967

English

...These data concern surface reports from land stations and lightships in the Netherlands at main standard times; upper level pressure, temperature, humidity, and wind reports from a land station (De Bilt); upper wind reports from De Bilt; and monthly and annual means of aerological data from De Bilt. Applied corrections are defined. (ES)

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104. Netherlands (Kingdom 1815-) Meteorologische Instituut, Onweders, optische verschijnselen, enz in Nederland [Thunderstorms, Optical Phenomena, etc. in the Netherlands], 's Gravenhage 1963. 91 p. DAS M82.1/492 N469o.

1963

Dutch

...Daily, monthly and annual summaries for 1955 and over period 1880-1955. Thunder (without lightning), total frequency, total thunder frequency, mean frequency per thunder day, total thunder days; Hail, number of days, total frequency; Lightning, frequency. This includes all of the Netherlands. (MLW)

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105. Netherlands (Kingdom 1815-) Meteorologisch Instituut, Frequentie van K-Daags Neerslagsommen op Nederlandse Stations [Frequency Distribution of Total Amounts of Rainfall K-Day Periods at Stations in the Netherlands] 140-25 Part A: Practical and Theoretical Considerations [1965], Part B: Tabular and Graphical, Non Parametric, Treatment of Some Actual and Practical Problems, Related to Rainfall Statistics [1963], De Bilt, tables, figs. DAS M77 N470fr 140-25A, B.

Part A 1965

Part B 1963

Dutch

...The choice of the 24 stations, the daily rainfalls of which were to be punched, was not easy. The basic period should be sufficiently long and homogeneous; the daily measurements should be reliable; the number of missing figures should be small; the stations should be distributed fairly regularly all over the country; they should be representative. There were no stations, which were ideal in all respects. Table 2 presents a survey (which holds for the end of 1953) of the stations with basic periods of at least 40 years. We see, for instance, that there were 24 stations with basic periods of 60 years and more, 17 of which present uninterrupted and 7 of which present interrupted basic series (see Fig. 3). The 24 stations which were ultimately selected are indicated in Fig. 5. Example: station Helmond; frequency book No. 6; basic period, 78 years; two uninterrupted sub-periods; 2.2% of the daily falls were missing. Part A of the study goes into the theory involved and Part B presents tabulated data. There are many figures, graphs, tables included in these volumes. (Pt. Author Abs.)

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106. Netherlands (Kingdom 1815-) Meteorologisch Instituut, Frequentie verdelingen van de hoeveelheden en duren van de neerslag in m-uurlijkse Tijdvakken (M-1-36), te De Bilt (1931-1960) [Frequency Distributions of the Amounts and Durations of the Precipitation in M-Hour Periods (M = 1-36) at De Bilt 1931-1960]. De Bilt 1966, 116 p, tables. DAS M77.21/492 N470fr.

1966

Dutch

...Two types of pluviographs have been used during the basic period 1931-1960, De Bilt, the records of which have been analyzed hour for hour: the balance and the float type (1931-1953 and 1954-1960). The rims of both self-recording rain-gauges were at 40 cm above the ground; the circular openings of the gauges were 400 cm^2. The opening of the ordinary, non-recording rain-gauge, with which the total quantity of rain was measured three times per day, also was 400 cm^2, but the height of the rim above the ground

106. (cont)

was 150 cm up to 1 Jan 1946 and 40 cm since then. The readings of the records of the pluviograph were not adjusted for the wind influence, since this was impracticable. Snow has been measured as rain since the self-recording rain-gauge was equipped with a heating device which came automatically into action as soon as the temperature of the collecting funnel fell below zero. Dew, fog, hoarfrost, and hail also have been measured as rain. Falling hourly values were estimated as well as possible in order to obtain uninterrupted series of data so that troubles of mechanical nature when constructing and punching the quantities and durations of rain in periods of successive hours could easily be overcome. (Author)

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107. Netherlands Royal Meteorologica Institute, Report of the Netherlands on National Climatological Activities 1965-1969, Rept. to WMO Secretariat, De Bilt, 1969, 3 p. IPB Files.

1969

English

...Contains the organization aspects, networks, observations, research, and bibliography for the Netherlands during the period 1965-1969. (DLB)

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108. Netherlands, Verslag over de Landbouw [Weather Conditions over the Lowlands], Ministere van Landbouw en Visseru, Annuals, 1948-1965, 'S-Gravenhage. DLC S237.A25.

1948-65

Dutch

...Contains monthly precipitation and temperature data (by year) with averages based on data back to 1931. Stations most frequently cited: De Bilt, Eelde, Winterswijk, and Oudenbosch.

In addition, some annuals contain graphs and charts showing normal precipitation and temperature conditions and compare them with a specific year. (DLB)

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109. Netherlands, Koninklyk Nederlands Meteorologische Institut Climatological Data of Netherlands Stations, No. 1, Normals for the Standard Period 1931-1960. K.N.M.I. publication No. 150-1, De Bilt, 1968, 115 p. IPB Files.

109. (cont)

...The compilation of frequency distributions for the five principal stations for the pressure, windspeed, wind direction, dry bulb temperature, wet bulb temperature, vapour pressure, relative humidity, sunshine duration, and precipitation (only for De Bilt) has been completed and the publication of these data is in preparation. A climatic atlas for the Netherlands is still in preparation. Maps of mean monthly values of temperature, first and latest frost data in autumn and spring, mean duration of frost-free period, mean number of days with minimum temperature < 0°C, and mean number of days with maximum temperature < 25°C have been composed for the issue of the "Scientific Atlas of the Netherlands". Maps of wind and circulation types for this Atlas are in press. (Author)

1968

English

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110. Rijkoort, P.J. Over De Dagelijkse Gang Van Bodem- En Luchttemperatuur En De Schatting Van Het Etmaalgemiddelde Van Deze Grootheden Uit Termijnwaarnemingen [On the Estimation of the Diurnal Variation of Soil Temperatures in the...] Koninklijk Nederlands Meteorologisch Instituut, De Bilt, 1963, W.R. 63-1. IPB Files.

1963

Dutch

...The subject of this paper is the estimation of the daily means of soil and air temperature (T_d) from the L.A.T. observations at climatological hours (8, 14, and 19 h) used in the Netherlands and, in the case of air temperature, also from the max and min temperature. (Author)

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111. Rijkoort, P.J. De Vorstdiepte in De Bodem Gedurende De Winter 1962-1963 [The Frost-Depth in the Ground Layer in the Winter 1962-1963], Koninklijk Nederlands Meteorologisch Instituut, De Bilt - 1964, W.R. 64-2. IPB Files.

1964

Dutch

...Temperature observations made at normal height in the air and at different depths in the soil during the severe winter 1962-1963 have been studied in detail. Complete series of observations over the whole frost-period are available from the stations De Bilt (in the centre of the country) and Castricum (in the dune district along the Northsea coast of the province of North-Holland); these observations have been performed at the height of 150 cm

111. (cont.)

above the ground and below the earth's surface at depths of 5, 10, 20, 50, 75, and 100 cm. Analogous observations, however, only for the last part of the frost period, were also available for the evaporation station near Ten Boer (Groningen). Finally, data of six different stations in the Delta-area (Zeeland) have been used for comparison. (ALS)

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112. Santema, P. Water Conservancy in the South-Western Part of the Netherlands. International Association of Scientific Hydrology, Publication No. 51:393-404, 1960. 3 figs. DAS M(06) I611g.

1960

English

...The Delta works, which are carried out in the south-western part of the Netherlands in order to improve the protection of the low-lying country against storm floods, make it possible to improve also the water conservancy in this region. At present, damage is caused by high salinities of the surface and ground water on one hand, and by desiccation on the other. The enclosed estuaries and tidal rivers will act in future as fresh water arteries, whereas the southern part will be transformed into a lake, which will make it possible to store water. In this article the water requirements for several purposes and the water management, which is being designed to meet these needs as much as possible, are discussed. (Author)

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113. Scharringa, H. Beoordeling van zomers [Classification of Summers], Hemel en Dampkring, The Hague, 58(10):227-230, Oct 1960, 4 tables. DAS M(05) N469h.

1960

Dutch

...It is not easy to give a summer its rightful place in a series of summers; the economic significance of a summer and the impression it makes on man depend on many factors. Temperature is an important factor, but the norm to be adopted may be chosen from mean temperature, mean daily maximum temperature, or number of summer days. Precipitation amount and sunshine duration are very important; rainfall amount and duration can also be considered. The author gives a table with the ten warmest and the ten coldest summers (1926-1960) classified according to: the the mean temperature of De Bilt, the number of summer days, the days with temperature $\geq 20°C$, and the mean maximum

113. (cont)

temperature. The correlation coefficient between number of summer days and mean temperature is + 0.75. There is a relation between: 1) the number of days with temperature $\geq$ 20° and the number of official summer days (> 25°); correlation coefficient: + 0.79. 2) mean temperature and number of days with $\geq$ 20° temperature; correlation coefficient: + 0.64. Another table gives the ten rainiest and the ten driest summers. The correlation coefficient between rain duration and precipitation amounts is + 0.80. Also the ten most sunny and the ten most cloudy summers are given. To end the article, all summers between 1901-1960 are rated from 1 to 35 according to: mean temperature, number of summer days, number of days with maximum $\geq$ 30°, mean maximum temperature, sunshine duration, rainfall amount, and rainfall duration. This method gives a group of seven classification numbers from which a mean index is deduced for final classification. (AV)

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114. Scharringa, M. Na een koude winter meer kans op een warme zomer [After a Cold Winter More Chance of a Warm Summer], Hemel en Dampkring, The Hague, 61(3):78-79, Mar 1963. DAS M(05) N469h.

1963

Dutch

...It is often claimed that a cold winter involves a great chance that the next summer will be warm; the year 1947 is cited as an example. This study investigates the accuracy of this assertion. Cold summer and Warm summer are defined. The investigation is based on data collected at De Bilt from 1856 to 1955. The results of this investigation reveal that the occurrence of a warm summer should not be linked with the fact that the preceding winter was cold. Moreover, it appears that the occurrence of a warm summer is also independent of the fact that the preceding winter was mild or not. The author calculated the correlation between two series of 100 winter and summer temperatures covering a period of 100 years. The correlation coefficient was found to be: $r = 0.013$. Since this value is nearly equal to 0, it may be concluded that the summer temperatures are by no means related to the temperatures of the preceding winter. Warm summers occur independently of a preceding cold or mild winter. (AV)

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115. Scharringa, M. Grillen van ons klimaat [Caprices of our Climate], Hemel en Dampkring, The Hague, 62(2):33-36, 1964. DAS M(05) N469h.

1964

Dutch

...The investigation of 227 years of data showed that Sep was the warmest month of the year 1961; this phenomenon occurred only once. Jul was, on an average, the warmest month; however, this was actually only the case in 51.5% of the years considered. In 40.7% of the cases, Aug was the warmest month, whereas Jun was only in a good 7% of the cases the warmest one. May was never the warmest month. This investigation, moreover, showed that Jan was the coldest month of the winter half-year in 47.7% of the cases. Nov and Mar were the coldest months in 3% of the cases. Precipitation means for the whole country over a period of 100 years revealed that Aug was the wettest month of the year, whereas Feb was the dryest one. For the May-Sep period, Jul was mostly the wettest month. Oct was, in the majority of cases, the wettest or the dryest month of the year. (AV)

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116. Schmidt, F.H. An Analysis of Dust Measurements in Three Cities in the Netherlands. 's Gravenhage, Staadsdrukkerij en Uitgeverijbedrijf, 1964. Meteorologisch Instituut. Mededelingen en verhandelingen nr. 86, 68 p. DAS M(055) N469m no. 86 Ger A.

1964

English

...The results of 2 years, hourly and bihourly, dust observations in the center of Rotterdam have been analysed with regard to a connection with meteorological and other circumstances. Wind speed and rainfall play an important role and are elaborated upon in detail. Many tables and figures are included. (ALS)

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117. Summersby, W.D. Distribution of Precipitation and the Variation of Visibility in Precipitation. "The Met. Mag." Vol. 98, No. 1165, Aug 1969, pp 252-259, 8 refs, 3 tables, station map. DAS M(05) G786m.

1969

English

...In this investigation, the area considered extends from the eastern and northern extremities of the Baltic across the British Isles to include the ocean weather sta (OWS) 'I' and 'J'. A selection of observations for 13 stations spanning this region are examined to show how precipitation varies in type and intensity across it and,

117. (cont)

using the observations nearest midday, how visibility varies in precipitation. Interest is mainly confined to coastal and sea areas rather than to inland stations (data for Schiphol, Netherlands is included). (Author)

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115. Ten Kate, H. 1959 was geer zonnig en droog [1959 was Very Sunny and Dry], Hemel en Dampkring, The Hague, 58 (3):76-79, Mar 1960, table. DAS M(05) N469h.

1960

Dutch

...The year 1959, with 5½ months of summertime, was very sunny, dry, and warm and was the opposite of the year 1958. Dryness was remarkable (536 mm rain for normally 719 mm); only 1921 was dryer. Only the month of Jan presented a precipitation surplus. Jan showed 18 snow days, it was exceptional. Temperature was above normal value: 10.1° (norm: 9.2°); 37 summerdays (norm: 24), 55 frost days (norm: 67). Jul 9th was the warmest day (36.6°); Feb was the coldest month. Sunshine was most abundant: from 1869 hours at Eelde to 1986 hours at Helder. High pressure was very frequent over the North Sea, blocking the arrival of low pressure and winds from the West. Winds were mostly between N and E. (AV)

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119. Ten Kate, H. De Winter 1960-61 [Winter 1960-61], Hemel en Dampkring, The Hague, 59(4):100-101, 1961. DAS M(05) N469h.

1961

Dutch

...A climatological survey of the winter season in the Netherlands. Two facts are to be noticed; mean temp above the normal and excessive precip. Dec and Jan were mild months with a mean temp of 3.8°C (norm: 2.3°) and only 21 frost days (norm: 41); a lower number of frost days had been recorded during the winter 1897/1898 when it reached 21. Feb had the largest thermal excess. The precip. amounted to 264 mm for a normal of 174 mm; this value of the winter (1960-61) was exceeded only in 1914/15 (mean for the territory -- 267 mm) and in 1947/48 (mean - 253 mm). The author comments on the depth of precip. for different provinces of the country. Sunshine duration was the lowest in the North, in other regions it was almost normal. Winds from SW predominated and fog occurred frequently. (AV)

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120. Ten Kate, H. De Zomer Van 1961 [Summer, 1961], Hemel en Dampkring. The Hague, 59(10):234-235, Oct 1961. DAS M(055) J469h.

1961

Dutch

...After the bad summer of 1960, great hope was set on the summer of 1961. A survey of the 3 summer months (Jun, Jul, Aug) 1961 does not indicate a fine summer. The temperature was nearly normal but there was a shortage of warm days and sunshine; it was a rather wet summer. The mean temperature at De Bilt was 15.7° C. (normal 16.4°C); there were 10 fine days during this period; whereas, there were 6 in Sep. The largest number of fine days was counted in the southeastern half of the Netherlands. The sunshine duration varied very much, the average for the entire country was 537 h (normal: 615 h). Regarding precipitation, important variations were also noted, the average for the entire country was 240 mm (normal: 214 mm), Zeeland was the driest region with 188 mm (normal: 196 mm), and Acterbock, the wettest one with 285 mm (normal: 230 mm). At De Bilt the rainfall duration was 136 h (normal: 108 h). Summer 1960 was characterized by a higher amount of rainfall in comparison with 1961; the period Aug 29-30, 1961 was very sunny and at the end of the summer, a few tropical temperatures were noted such as on Sep 16. (AV)

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121. Ten Kate, H. De zeer natte winter 1961-1962 [The Very Wet Winter of 1961-1962], Hemel en Dampkring, The Hague, 60(4):103-104, Apr 1962. DAS M(05) N469h.

1962

Dutch

...Climatological survey of the winter 1961-62 (Dec, Jan, Feb) in the Netherlands. The temperature of the 3 winter months in De Bilt was 2.6°C against 2.3°C. normal. Dec was the coldest and Jan the warmest month. Throughout the country 255 mm precipitation was an average against 175 mm, normal. The largest quantity reached 307 mm and was measured at Veluwe; the smallest, 200 mm, in the northern half of Limburg. It rained during 228 hours against 117 hours normal at De Bilt. The large quantity of rain caused great difficulties. The storms of Feb 12-13 and Feb 16-17 caused damage on the coast. The average of the number of sunshine hours of the country amounted to 189 against 100, normal; 214 hours sunshine were recorded at Woensdrecht and only 155 hours at Winterswijk. (AV)

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124. Ten Kate, H. De zomer van 1963 [Summer, 1963], Hemel en Dampkring, The Hague, 61(12):306-308, Dec 1963, 3 figs. DAS M(05) N469h.

1963

Dutch

...General survey of the main climatic elements during summer 1963 in the Netherlands. Like the 3 preceding summers, that of 1963 was too cold, too wet, and too dull; the few fair days during this period did not make up for the deficiency of sunshine, heat, and dry weather. Aug was rather cold and in the coastal region, there were only 5 summery days; while in the northernmost part of the Netherlands, there was no summery day. There was a marked sunshine deficit in the southeast. For the whole country the average rainfall reached 266 mm for 214 mm normal. The excess was most important in Zeeland, southern Holland, and central Holland; it was smaller in the far southeast. (AV)

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125. Ten Kate, H. Het weer in 1964 [Weather in 1964], Hemel en Dampkring, The Hague, 63(4):94-96, 1965. 2 figs. DAS M(05) N469h.

1965

Dutch

...Survey of the weather in the Netherlands in 1964. In general, temperature, precipitation, and sunshine deviated little from normal. The winter was cold, very dry, and rather sunny; spring had normal temperature and precipitation but a very high number of days without sunshine; the summer was normal; and autumn rather cold. The mean temperature at De Bilt was 9.1°C against 9.3° normal; 201 days were too cold. Coldest month was Jan; warmest, Jul. De Bilt had 23 summer days (normal -- 23) and 71 frost days against 64 normal. The highest temperature was 37°C at Venlo and the lowest -13°C in the east. Amount of precipitation in the 15 districts of the Netherlands, normal amount, and deviation from normal are shown on a chart. Wettest was southern Holland with an average amount of 788 mm against 752 mm normal; driest was Drente with 610 mm against 752 mm normal. The average amount for the country was 697 mm (normal 740 mm). Jan and Feb were driest, Oct wettest. The distribution of sunshine duration is also shown on a chart. Hellevoetsluis had most sunshine with 1687 hr. Kootwijk least with 1503 hr. De Bilt had 88 days without sunshine (normal - 69 days). There were five days with severe storms or heavy thunderstorms. (AV)

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124. Ten Kate, H. De zomer van 1965 [The Summer of 1965], Hemel en Dampkring, The Hague, 63(12):338-340, 1965. Figs. DAS M(05) N469h.

1965

Dutch

...Climatologically seen, the summer of 1965 and, especially, Jul in the Netherlands, was wet, somber, and cold. During Jun, Jul, and Aug, 308 mm rain fell on the average against 214 mm, normal. Since the beginning of the observations in 1850, only 4 summers were wetter: 1882 (328 mm), 1894 (333 mm), 1927 (323 mm) and 1954 (321 mm). The deficits in sunshine duration varied from 21% in South Limburg to 6% in Eelde. The mean temperature at De Bilt was 15.0°C against 16.4°C, normal. During the last 50 years only the summers of 1956 (14.4°C) and 1962 (14.6°C) were colder. The absolute maximum at De Bilt was 27.6°C; except for 1962 (27.0°C), this is the lowest maximum ever observed since 1850. Charts are presented of the distribution of precipitation, sunshine duration, number of summer days, and mean temperature in the Netherlands. (AV)

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125. Ten Kate, H. De winter van 1967/68 [Winter of 1967/68], Hemel en Dampkring, The Hague, 66(6):139-141, 1968. Figs. DAS M(05) N469h.

1968

Dutch

...The 1967-68 winter weather of the Netherlands is described with the aid of maps, showing max and min temperature on Jan 13, 1968, the mean daily temperature for Dec, Jan, and Feb and the distribution of precipitation and sunshine. The mean atmospheric temperature was approximately normal, but there was considerable precipitation and cloudiness. Several severe cold spells are described briefly. (ILD)

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126. Ten Kate, H. De zeer natte zomer van 1968 [The Very Wet Summer of 1968], Hemel en Dampkring, The Hague, Vol. 67, No. 1, 1969, pp 11-13. DAS M(05) N469h.

1968

Dutch

...During the summer of 1968, the mean rainfall in all of the Netherlands was 289 mm as compared with the normal of 214 mm. The author presents maps showing the total precipitation in the three summer months at various points in the Netherlands and the percent deviation from the normal; sunshine duration (in hours) in the three summer months of

125. (cont)

1968; the mean daily temperature; and the number of summer days from Mar to Sep. The characteristics of precipitation, sunshine, and temperature, and their interrelationship are discussed. (ILD)

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127. Timmerman, H. The Influence of Topography and Orography on the Precipitation Patterns in the Netherlands. Netherlands. (Kingdom 1815-) Meteorologisch Instituut. Mededelingen en verhandelingen No. 80, 1963. DAS M(055) N469m [Ser A] No. 80.

1963

English

...The influence of the topography and the orography on the precipitation pattern in a certain area, such as the Netherlands, depends to a very high extent on the wind direction. It is, of course, well known that, in addition, precipitation patterns are also affected by other factors, as there are the distribution of convective cells, the presence of condensation nuclei, etc. The influence of the latter factors makes it difficult to draw conclusions about the influence of the topography and orography by studying the patterns originating from individual days. However, by grouping cases according to wind direction, the influence of the wind direction will dominate over that of the other factors, which, in this way, will be more or less eliminated.

The present study describes the distribution over the Netherlands of the number of rainy days and of the mean observed precipitation amounts for various wind directions. As the number of days with rain in the various wind direction groups were too small, no attempt was made with respect to the differentiation of the wind speed. (Author)

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128. Van Den Bergh, G. De meteorologische winter 1961-1962 [The Meteorological Winter 1961-62], Hemel en Dampkring, The Hague, 60(4):104-105, Apr 1962. DAS M(05) N469h.

1962

Dutch

...The article deals only with the temperature of the winter 1961-62 at De Bilt, Netherlands. The winter was 0.3°C warmer than normal when considering the period Dec 1-Mar 1; normal winter temperature: 2.3°C, winter 1961-62: 2.6°C. When considering the period Dec 15-Mar

128. (cont)

15, however, the temperature was 0.5°C lower than normal, for this period and an average of 1.8°C normal. (AV)

... Van Der Hoeven, P.C.T. Klimaatbeschrijving van het Deltagebied [Climate of the Rhine Delta Region] Free Air Temperatures, K.N.M.I. Wetens. Rapport, W.R. 69-1, De Bilt 1969, 70 p, 14 tables. IPB Files.

1969

Dutch

...A review is given concerning the routine processing of these observation series and climatological terms, the influence of instruments, etc. A description is given of the temperature climate of the so-called Delta area. The daily course of temperature, the difference of the daily extremes, the daily maximum and minimum temperatures, the number of tropical, summer, frost, and ice days are also included. (ALS)

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129. Vogel, J. C. (Groningen). Investigation of Groundwater Flow with Radiocarbon. (In: Symposium on Isotopes in Hydrology, Vienna, Nov 14-16, 1966, Isotopes in Hydrology: Proceedings of the Symposium held by the International Atomic Energy Agency in cooperation with the International Union of Geodesy and Geophysics. Vienna, International Atomic Energy Agency, May 1967, pp 355-369. Figs, tables, refs, eqs. DAS M/9 S969is.

1967

English

...Potentiality of radiocarbon dating of ground water in the evaluation of recharge rates of aquifers. Relationship between the age at a point in the water body and the recharge depends on whether or not the aquifer is confined. For an unconfined aquifer receiving recharge over the whole surface area, a simple relationship is obtained. Such an aquifer can be characterized by the age at half depth. Natural radiocarbon has been used to study flow patterns and flow rates of subterranean water supplies in different regions in the Netherlands. Deep ground water in the southeast region of the Pleistocene presents a complicated situation caused by the inhomogeneity of the strata. Flow rates are not readily deduced, but the different aquifers can be distinguished by using the isotopes C-14, C-13 and C-12 as natural tracers. In the province of Friesland, deep ground water shows a more consistent picture with flow-times of several thousand years

130. (cont)

corresponding to a quite acceptable flow rate of ~ 10 m/yr. A much faster turnover time is observed in the unconfined, fresh water aquifer on the island of Schiermonnikoog. Hydrological parameters, as deduced from C-14 and H_3 measurements, compare reasonably well with other methods. (Author)

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131. Wessels, H.R.A. (De Bilt). De zware windhozen van 25 juni 1967. [Severe Tornadoes of June 25, 1967], Hemel en Dampkring, The Hague, 66(7/8):155-178, figs, photos, charts, refs. DAS M(05) N469h.

1968

Dutch

...This detailed synoptic study of the tornadoes that occurred near Chaam and Tricht in the Netherlands comprises the following: the atmospheric conditions associated with the occurrence of severe squalls; the synoptic conditions over West Europe during the period June 23-25, 1967; the hourly weather in the Netherlands, Belgium, and Northern France on June 25, 1967; rain and hail on June 25, 1967 in this area; and the development and characteristics of the June 25 tornadoes. The discussion is accompanied by detailed synoptic maps. (ILD)

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132. Woudenberg, J.P.M. Nachtvorst in Nederland [Night Frost in Holland] K.N.M.I., Wetens. Rapport, W.R. 68-1, De Bilt, 1969. 210 p, figs, tables. IPB Files.

1969

Dutch

...This paper gives the results of the investigations into the risk of damage to crops caused by ground frost in spring. The author's records of temperatures 10 cm above the ground show that the differences between simultaneous readings from a shielded and an unshielded thermometer on a clear calm night was at least 0.8°C. Temperature measurements were taken at 10 cm above ground with a protected thermometer. Intensities of frost are also covered. (ALS)

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13. ABSTRACT

This bibliography contains 132 climatological references concerning the BENELUX countries published during the period 1960-1969. Items are arranged alphabetically by author for each country and a section of general references is included. A subject index is furnished.

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